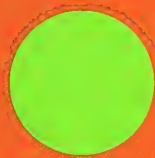


# *A REPORT ON THE RESULTS OF THE STUDY OF METHODS OF REIMBURSEMENT FOR PHYSICIANS' SERVICES UNDER MEDICARE*

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HEALTH INSURANCE BENEFITS  
ADVISORY COUNCIL

July 1973



Department of  
Health, Education, and Welfare  
Social Security Administration

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"The Effects of the Medicare Method of  
Reimbursement on Physicians' Fees and on  
Beneficiaries' Utilization"

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Volume I - Summary of Principal Findings  
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## FOREWORD

Health Insurance for the Aged (Medicare) under social security consists of a two-part program. Part A provides insurance protection against the costs of provider services (hospital, extended care facilities, and home health agencies) and is financed through social security contributions. Part B, which is a voluntary insurance program, provides basic protection against the costs of covered physicians' services and various other medical services to the aged who elect to enroll and pay monthly premiums. These premiums are matched with monies from Federal general revenues.

Both parts, administered by the Social Security Administration through designated insurance intermediaries or carriers, are characterized by quite different reimbursement methods. Payments for Part A services are based on reasonable costs while Part B services are reimbursed on a reasonable charge basis.

The methods of paying for physicians' services under Medicare have come under close congressional scrutiny during considerations of the Social Security Amendments of 1972, P.L. 92-603. Section 224(b) of the amendments requires the Health Insurance Benefits Advisory Council (HIBAC) to conduct a study of the methods of reimbursement for physicians' services under Medicare for the purpose of evaluating their effects on (1) physicians' fees generally, (2) the extent of assignments accepted by physicians, and (3) the share of total physician-fee costs which the Medicare program does not pay and which the beneficiary must assume. The Council was required to report the results of the study to the Congress together with a presentation of alternatives to the present methods of reimbursement and its recommendation as to the preferred method of reimbursement.

This report presents a substantial amount of information derived from a comprehensive study of the reimbursement methods enunciated by the Social Security Administration and implemented by the carriers.

The report was assembled with the advice and help of an ad hoc committee of the Health Insurance Benefits Advisory Council which, when the report was completed, was under the chairmanship of Mr. Edwin May. Current members of the committee are: Carl E. Anderson, M.D.; William S. McNary; Ernest W. Saward, M.D.; and Harlan Thomas, M.D.

Former members of the HIBAC who contributed to the early development of this report as members of the committee are: Nelson H. Cruikshank; Merrill O. Hines, M.D.; Jay S. Reibel, M.D.; Charles Schultze; Herman M. Somers; and J. Minott Stickney, M.D.

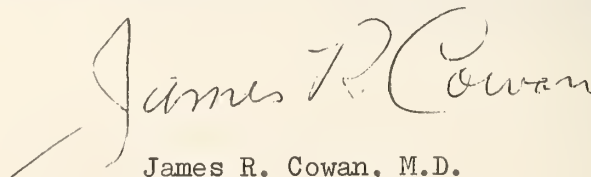
The services of Robert R. Nathan Associates of Washington, D.C. and Research Triangle Institute (R.T.I.) of Research Triangle Park, North Carolina were utilized to perform research and analysis of present methods of reimbursement under the Medicare program. Results of their findings are attached to this report.

R.T.I. conducted a study to determine the factors physicians take into consideration in deciding whether to accept assignment and the billing arrangement physicians made to cope with the deductible and co-insurance features of reimbursement. The study was based on a pilot survey of physicians to ascertain if the kinds of information obtained from interviewing them would warrant a broader national survey of the members of that profession. The results indicated that further interviews would not be expected to elicit any more information than was already known and which had been verified by the pilot survey.

Nathan Associates' task was to attempt to ascertain the effect of the Medicare methods of reimbursement on physicians' fees and utilization by beneficiaries.

While the focus of these studies was on the period 1966-69 because of the availability of data and because of the existing variety in reimbursement method application by the carriers, changes have occurred since then which have recently reduced physician fee growth. The committee has attempted to take into account these more recent factors. A considerable portion of their analysis involved multiple correlation techniques. As in all correlations there can be no clear cause and effect relationships proven. These relationships must be viewed within the limitations of the data and the method of analysis chosen.

It is hoped that the data and the discussion in the report will be useful to the Congress, especially during any deliberations over prospective statutory changes in the Medicare program relating to the reimbursement for physician services.

A handwritten signature in cursive script that reads "James R. Cowan". The signature is written in dark ink and is positioned above the printed name and title.

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Chairman  
Health Insurance Benefits  
Advisory Council

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## I. Introduction

### A. Background

In making reasonable charge determinations and in making payments for covered services, carriers are governed by the provisions of section 1842(b)(3) of Title XVIII (Public Law 89-97), regulations issued by the Secretary of Health, Education, and Welfare and their contracts pursuant thereto with the Social Security Administration under which they assume responsibilities in the administration of the supplementary medical insurance plan (Part B) of the Medicare program. Section 1842 provides that the carrier in determining reasonable charges shall take into consideration: (1) the customary charges for similar services generally made by the physician or other person furnishing such services; and (2) the prevailing charges for similar services in the locality. It provides, also, that the reasonable charge for a service may not be higher than the charge applicable for a comparable service and under comparable circumstances to the carrier's own policyholders and subscribers. (It is recognized that there are also some physicians who have salary and other compensation arrangements with providers of services and for whom reasonable charges are derived from their compensation. This study did not include such cost related reasonable charge payments.)

In each calendar year a deductible must be met before payment can be made under Part B. The deductible amount has been \$50, however, effective with January 1, 1973, the deductible was increased to \$60. Reasonable charges incurred by the beneficiary for covered services count toward meeting the deductible even if in a given case he is unable to pay the bills. Noncovered expenses do not count toward the deductible.

The reports on H.R. 6675 of the Senate Finance Committee and of the Committee on Ways and Means of the House of Representatives reinforced the language of P.L. 89-97 in outlining the responsibilities of the carriers under the program, and the basic factors they needed to consider in determining the reasonableness of the charges. In addition, the report of the Senate Finance Committee emphasized the importance of relying on the existing mechanisms and procedures in determining reasonable charges. The policies, guidelines, and methods used for the determination of reasonable charges were to be, as much as possible, flexible and in conformity with the existing practices of the medical community, the insurance industry, and appropriate third-party prepayment organizations.

It was clear that the law did not contemplate the establishment of a uniform fee schedule applicable to all physicians or to all physicians in a locality but rather called for individualized

determinations which took into account the charges of the particular physician and of other physicians in the locality.

Also, it was clear that the going rate which was charged to the general public was intended to be the basis for determination of the reasonableness of any charge for a medical service under the program. It was intended on the one hand that this would have the effect of placing beneficiaries as a group in the position of being able to obtain services on a basis comparable to others in the general population. On the other hand, it was intended that this basis of determination would provide effective protection against acceptance of charges as "reasonable" under the program which were out of line with those applicable to the general public for comparable services.

The objective of the carrier determination process was to assure that charges accepted as reasonable under the program; (1) were no higher than those the individual physician generally made to his other patients; and (2) were within the limits of charges which were most frequently and most widely made for similar services in the locality. Subject to these limitations, and the requirement that the reasonable charge could not be higher than the charges applicable to the carrier's own policyholders and subscribers for comparable services and under comparable circumstances, the actual charge made by a physician was to be accepted as the basis for payment under the program.

The present methods for determining reasonable charges have evolved from a series of administrative decisions that were made to establish a standard method for calculating the customary and prevailing charges of physicians. It should be remembered that in 1966 the common methods used by organizations administering third-party payment programs for reimbursing medical claims were relative value studies with conversion factors, fixed-fee schedules for selected procedures, or in a few cases prevailing fee schedules (usually set at the 90th percentile of prevailing fees in a carrier's service area). Very few health insurance plans routinely considered a physician's customary (usual) charge in their reimbursement policies. Thus, the introduction by Medicare of a new basis for determining an allowable amount for a physician's service presented administrative difficulties for most of the carriers.

In addition, after the Medicare program got under way, it was soon evident that the reasonable charge determinations of the separate carriers were not consistent. For instance, some carriers recognized as "customary" any new fee that the physician announced was his usual fee for a service; others required a period of time to elapse before the new fee was considered "customary." The mathematical calculations for determining a physician's customary charge for a service varied also among the carriers. Some used a mode, others a median, and others an arithmetic mean for calculating that particular charge among the several charges a physician might make for a service which could be said to be his "customary" charge. Similar differences occurred among the carriers for calculating the prevailing charge in a locality for a service. Consequently, over the years, Medicare increased its efforts to bring about greater uniformity in the methods carriers use to calculate customary and prevailing charges.

## B. The Medicare Reasonable Charge Process

### 1. Customary and Prevailing Charges:

As stated earlier, the reasonable charge allowed by a Medicare carrier for a service may not normally exceed the lowest of: (1) the actual charge made for the service; (2) the customary charges for similar services generally made by the physician or other person furnishing the service in the locality; or (3) the prevailing charges in the locality for similar services. (Higher amounts may be allowed in a given instance for a specific service, but only where the additional fee is warranted by unusual circumstances or medical complications and the service is in fact different from that for which the normal fee is reasonable.)

To carry out the reasonable charge provisions of the statute, the Medicare carriers develop listings of the customary charges for services rendered by the physicians and suppliers in their service areas, and develop prevailing charge screens based on these customary charges. The customary and prevailing charge limits used by the carriers are generally updated early in each fiscal year (the 12-month period beginning July), using the available statistics on charges physicians and suppliers have made for services during the immediately preceding calendar year. Thus, for example, the limits used during fiscal year

1972 (July 1, 1971 - June 30, 1972) were based on data on the charges made in calendar year 1970. There are several reasons for this lag in the Medicare program's recognition of fee increases, and for not updating the allowances more frequently. One is that a charge must be made over a period of time before it can meet the requirement that it be "customary." Also, the statistics on charges on which the carriers' allowances are based must be collected over a period, and at the end of that period the data must be tabulated and analyzed before fee increases can be put into effect. Finally, were Medicare to recognize increases in charges as quickly as they are made, Medicare might lend support to rapid escalation of the rates.

In calculating the customary charge screens to be used during a fiscal year (beginning July 1 or as soon thereafter as they can be incorporated into the carrier's payment system), each charge the physician or supplier has made for a particular service during the preceding calendar year is arrayed by the carrier in ascending order. The lowest actual charge which is high enough to include the median of the array of charge data is then selected as the customary charge for the service. The prevailing charge in the locality for a given service is currently set at the 75th percentile of the customary charges for the service, weighted by how often the service was rendered (as reflected in the Medicare carrier's data).

## 2. Locality and Specialty Practice

In calculating the prevailing charge for a service "in the locality," carriers use charge data derived for that locality. The instructions issued to the Medicare carriers by SSA provide that a "locality" will usually be a political or economic subdivision of a State, which includes a cross-section of the population with respect to economic and other characteristics. The instructions provide for recognition of medical service areas in establishing the boundaries of the localities. In practice, the carriers have used different methods to identify the "localities" in their service areas for Medicare reimbursement purposes. For example, some have identified each county and/or major city as a separate locality. To cite an extreme in fineness of setting locality boundaries, each "medical district" established for Los Angeles by the Los Angeles County Medical Society was recognized as a separate "locality" by the Medicare carrier to facilitate its interaction with the medical community (e.g., review committees). However, although there are 17 such "medical districts" only four distinct prevailing charge levels have been recognized for Medicare purposes in Los Angeles.

Generally, the carriers have tended to identify "localities" by treating sometimes noncontiguous areas with similar charge levels as a single locality. Thus, single "localities" have sometimes been developed by combining all areas in a region classified as "metropolitan," "urban," or "rural" areas. Other carriers, particularly ones serving sparsely populated States, have found no significant variations in charge patterns within their service areas and therefore the whole service area of a carrier in some cases is treated as one "locality."

Separate prevailing charge levels in a locality have also been recognized by the carriers for physicians in different kinds of specialty practice. Carrier determinations in this regard are intended to be responsive to the existing patterns of charges and fee level differentials established over time by the medical community itself.

Medicare payments for the same service, therefore, may vary from one locality to another and from one physician to another in the same locality. These differences reflect the provisions of law that Medicare reasonable charge payments take into account patterns of charges that physicians and other suppliers of services have established.

### 3. Comparability

In addition to establishing the customary and prevailing charge criteria for judging the reasonableness of a charge, the law specifies that the reasonable charge for a service may not be higher than the charge applicable for a comparable service under comparable circumstances to the carrier's own policyholders and subscribers.

The Social Security regulations provide that "comparable circumstances" refers not only to the circumstances under which medical services are rendered to patients, but also to the nature of the carrier's health insurance programs and to the methods it uses to determine the amounts of payments under these programs. Generally, comparability is considered to exist where: (1) the carrier bases payments under its program on the customary charges of physicians, and on current prevailing charges in a locality; and (2) the carrier's payment determination does not preclude recognition of factors such as specialty status and unusual circumstances involved in the service which affect the amount charged for a service.

4. Implementation of Phase II of the President's Economic Stabilization Program

As indicated above, allowable charges are updated annually to take into account the actual charges physicians and suppliers have billed for covered services in the immediately preceding calendar year. Thus, for the 12-month period beginning July 1, 1972, the allowable charge levels were calculated by the carriers from actual charge levels for calendar year 1971.

However, the Federal Price Commission <sup>1/</sup> ruled that the Medicare allowable charges in effect November 13, 1971, were to be considered as base prices for Phase II purposes, and that, as a result, they could not be increased by more than 2.5 percent in the aggregate during the fiscal year beginning July 1, 1972. Based on actual increases in physician and supplier billings in calendar year 1971, the charges allowed under the Medicare program for the 12-month period beginning July 1, 1972, would normally, in the absence of the Economic Stabilization Program, have been increased by about 6.2 percent in the aggregate. To implement the Price Commission's ruling, only 40 percent (2.5 is about 40 percent of 6.2) of the increases that would ordinarily have been allowed were recognized in calculating Medicare's allowable charges for the fiscal year beginning July 1, 1972.

5. Prevailing Charge Screens Based on Economic Indexes

Under a provision in the Social Security Amendments of 1972, increases in the prevailing charges for physicians' services can be recognized in fiscal year 1974 and in later years only to the extent justified by indexes reflecting changes in the operating expenses of physicians and in general earnings levels. The law, therefore, provides a limit on the increases that would be recognized on the basis of the other reasonable charge criteria. Increases in the customary charges of individual physicians and in the charges prevailing among physicians in a locality would continue to be recognized only on the basis of adequate evidence that such increases had been in effect for a period of time. The new ceiling on recognition of increases in prevailing charge limits that is provided would come into play only when the adjustments necessary to meet actual increases

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<sup>1/</sup> Health Services Industry Committee of the Federal Price Commission.

in prevailing charges exceeded, in the aggregate, the level of increase justified by other changes in the economy. The Secretary would establish the methodology that would be used to make the calculations to establish the limit on the increases allowed by this provision.

It should be noted that if physicians' customary charges generally increase at a rate greater than the increases in prevailing charges that can be allowed by Medicare based on economic index data then the Medicare carriers' prevailing charge screens may tend to become "fee schedules."

## II. The Relationship of Medicare's Method of Reimbursement to Physicians' Fees

This portion of the report contains three sections. The first of these examines physicians' fees generally. In the second section Medicare physicians' fees are investigated to seek to explain the variation in Medicare fee growth among 35 States. In section three, a comparison of Medicare physicians' fees with fees under other methods of physician reimbursement is undertaken.

### A. Physicians' Fees Generally

Have physicians' fees risen at a faster rate due to the introduction of Medicare and Medicaid? Judging from the Bureau of Labor Statistics' Physicians' Fee Index (PFI) component of the Consumer Price Index (CPI), the answer would appear to be "Yes." However, before Medicare and Medicaid can be pinpointed as the major causes of the PFI increase, if indeed they can, other factors which influence physicians' fees must be isolated.

A strong average annual increase in the PFI is shown in Table 1 below. <sup>2/</sup> Note also the jumps in the CPI and the percentage of all medical service costs paid by third-parties--including Medicare and Medicaid payments.

Table 1.--Selected Average Annual Rates of Growth

	1952-60	1961-65	1966-69
BLS Physicians' Fee Index (PFI).....	3.3	2.8	6.3
BLS Consumer Price Index (CPI).....	1.5	1.4	4.3
BLS All Services Price Index.....	3.7	2.1	5.8
Percentage of Third-Party Payment.....	5.4	1.5	11.2

In the study by Robert R. Nathan Associates (RRNA), the annual rate of change in the PFI for the years 1952-69 was related to the annual rates of change in the CPI, the percentage of third-party payment, and to a variable representing the years 1966-69. <sup>3/</sup>

<sup>2/</sup>Robert R. Nathan Associates, Inc., "The Effects of the Medicare Method of Reimbursement on Physicians' Fees and on Beneficiaries' Utilization," Volume II, Part I (April 1973), p. 7 (Appendix A) and Bureau of Labor Statistics, Consumer Price Index and selected components.

<sup>3/</sup>Robert R. Nathan Associates Inc., Volume II, Part I, p. 8.

These variables were statistically significant at the 5 percent level. Other variables tried but found insignificant were the rates of change in physicians per 100,000 population (a physician supply variable) and in per capita income (a demand variable).

From this model the inference is that physicians' fees rose because prices in general (measured by the growth of the CPI) rose, because direct charges to the consumer for medical services (measured by the growth of third-party payment--to which Medicare and Medicaid strongly contributed in the 1966-69 period) fell, and because the Medicare and Medicaid programs began in 1966. This latter influence indicates that the BLS PFI increased by 1.8 percent annually, on the average, during the 1966-69 period after allowing for the effects of the growth in the CPI and the growth of third-party payment.

Caution must be used in the interpretation of this 1.8 percentage increase since other social phenomena having influences beginning in 1966 could also be causally related to the temporal rise in physicians' fees in the 1966-69 period. Nevertheless, the implication is that Medicare (and Medicaid) has contributed to the increase in physicians' fees generally greater than the sole effect of adding to the percentage of third-party payment.

#### B. Medicare Physicians' Fees Specifically: 1967-69

If the application of the Medicare method of reimbursement by the carriers had been completely uniform across the United States, there would have been little variation in the method to cause geographical differences in physicians' fees. For research purposes, at least, it is fortunate that understanding the Medicare reasonable charge criteria and developing experience in handling physicians' charges reduction and the assignment mechanism took some time in the period after Medicare began. With this disparity in carrier application of the Medicare method of reimbursement of physicians' charges providing sufficient diversity among 35 States for economic analysis, <sup>4/</sup> Robert R. Nathan Associates examined the variation in the total growth rate of average (actual charges weighted by the number of all medical services experienced by the carrier in 1969) actual Medicare physicians' fees from 1967 to 1969.

The study succeeded in isolating several factors associated with lower growth rates of Medicare physicians' fees during 1967-69. First of all, the use of a fee schedule by the carrier held down

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<sup>4/</sup> To illustrate this diversity, Table 3 from the RRNA study is reproduced on the following page. Ibid., p. 22.

Table 3. Distribution of Medicare "Reimbursement Methods"  
Among Carriers, 1967

	Where carrier is same as state	All carriers <sup>a/</sup>
Classification of fee schedule 1:		
No fee schedule.....	11	17
Fee schedule (R.V.S. or ceiling)...	26	42
Total.....	37	59 <sup>b/</sup>
Classification of fee schedule 2:		
No fee schedule.....	11	17
Fee schedule (ceiling).....	8	16
Fee schedule (R.V.S.).....	18	26
Total.....	37	59 <sup>b/</sup>
Recognizes specialty:		
No.....	22	36
Yes.....	15	24
Total.....	37	60
Frequency of updating:		
Above 1 year.....	3	12
6-12 months.....	11	17
Less than 6 months.....	6	12
Irregularly.....	12	18
Total.....	37	59 <sup>b/</sup>
Sources of data used for prevailing charges:		
All charges (Medicare and non- Medicare).....	14	23
Medicare only.....	17	23
"Own business" only.....	6	11
Total.....	37	57 <sup>c/</sup>
Definition of prevailing charges:		
Other prevailing charges.....	6	12
80-95 percentile of charges (cus- tomary, Medicare, non-Medicare, all).....	11	16
Fee schedule or R.V.S.....	20	32
Total.....	37	60
Type:		
Non Blue Shield.....	19	28
Blue Shield.....	18	32
Total.....	37	60

<sup>a/</sup> Only carriers from the 50 states and Washington, D.C. , are in-  
cluded. See appendix B for the listings.

<sup>b/</sup> Minnesota B/S not available.

<sup>c/</sup> Ohio B/S, Kansas B/S, and Maryland B/S not available.

the physicians' fees growth rate; both the ceiling approach and the relative value system approach were effective, with the former being quantitatively of greater strength. Infrequent updating (6-12 months or longer) of customary charges acted to retard the fee growth rate as did a carrier's use of physicians' fee data from its "own" private insurance business combined with data from its Medicare business--compared with using either data source by itself.

Blue Shield carriers had a significant slowing effect on the fee growth rate, possibly because they had more experience resulting from applying a 90 percentile definition of prevailing charges in their own business and because they received more physician cooperation since historically Blue Shield participating physicians have agreed to accept Blue Shield allowance as full payment. Ceteris paribus, carriers with higher average fees over the 1967-69 period experienced lower physician fee growth. States with more non-Federal general practice physicians per 100,000 population in 1968 had higher physicians' fees growth rates. Perhaps in these States there is a better interchange of market information among physicians and a greater demand for physicians' services.

Surprisingly, a greater percent of the aged population 75 years and older is associated with a lower physicians' fees growth rate. The skewness of the distribution of those 65 years and older toward the higher ages in a State would be expected to result in higher physicians' fees over time, pulled upward by a greater demand for medical services, but just the opposite result was found. One potential explanation is that physicians were price-discriminators in favor of the very aged and possibly tended to accept assignment more from patients 75 years and older.

According to RRNA's model, 44 to 54 percent of the variation in the growth rate of Medicare physicians' fees from 1967 to 1969 over 35 States can be explained by method of reimbursement factors, other Medicare physicians' fees statistics, and selected socio-economic variables. 5/ Medicare does not usually employ the widespread use of a fee schedule, ceiling or relative value, in setting reasonable charges but the analysis implies that doing so would reduce the rate of growth of physicians' fees. The Medicare method does instruct carriers to use physician fee data from both their "own" business and their Medicare business in computing "customary" and "prevailing" physicians charges. This factor and a time lag in recognizing new customary charges contribute to dampening the growth in Medicare physicians' fees.

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5/ Ibid., p. 37.

Earlier, it was noted that the Medicare method potentially contributed 1.8 percent to the growth rate of the BLS Physicians' Fee Index. Judging from the variation found in the application of the Medicare method, it might be quite proper to pin the 1.8 percent increase, or some part of it, on the widespread deviations from the Medicare method of reimbursement among carriers. Such practices as frequently updating (0-6 months) the physicians' customary charges or the use of physician fee data from the carrier's "own" medical business only, rather than a combination of the carrier's "own" business with its Medicare business, could have led to higher fees not because Medicare reimbursement came into being but because the Medicare method was not applied uniformly by all carriers.

### C. Medicare Physicians' Fees Compared with "What Others Pay"

In order to compare Medicare medical fees with "what others pay," RRNA computed a Laspeyres index (base year weights) of Medicare "actual" (i.e., billed) charges for the years 1967 to 1970. Both the Medicare Physicians' Fee Index and the BLS Physicians' Fee Index grew at an annual rate of approximately 6.5 percent. However, a Laspeyres index of Medicare "allowed" physician charges grew at a much lower rate, roughly at 4.6 percent annually. Since the Medicare PFI of "actual" charges does not extend backward in time beyond 1967, it appears appropriate to use the BLS PFI as an indicator of Medicare fees for comparison with the medical fees paid by other programs.

When a Medicare PFI was computed by type of service for the period 1967-70, consultation had the highest total growth rate (140.1 percent for "actual" charges/33.8 percent for allowed charges), followed by anesthesia (33.1/23.3), and medical care (31.1/23.8). At the low end of the growth rate spectrum was surgery (5.0/-0.4). <sup>6/</sup>

Robert R. Nathan Associates compared the growth of physicians' fees under several alternative reimbursement programs. <sup>7/</sup> First, for indexes composed of 24 and 19 common procedures important to the aged in Maryland and in Michigan, respectively, Medicare physician charges, both "actual" and "allowed," grew less rapidly during the 1969-71 period than did Blue Shield physician charges in each of the two States. In Maryland, Blue Shield "allowed" charges rose nearly 10 percent during the period, but the rise was less than 3 percent for Medicare "allowed" charges.

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<sup>6/</sup> Ibid., p. 48.

<sup>7/</sup> Ibid., pp. 49-59.

Second, relative value scales were examined. It was discovered that the growth rate (23.6 percent) of physicians' fees for a prepaid plan in San Joaquin County, California, in which the physicians accept amounts derived through use of a relative value scale as full payment, not only was lower during the 1966-71 period than growth rate of a general index of physicians' fees compiled by the California Medical Association (28.4 percent), but also lower than the BLS PFI (39.0 percent) during the same period.

Third, there were problems with constructing a measure of medical charges for Health Maintenance Organizations. The major difficulty was that physicians do not charge the HMO or the patient directly for each visit since they are paid on a salary or capitation for the most part. RRNA weighted changes in cost per ambulatory visit for the entire range of ambulatory visits in constructing an index for the Group Health Association of Washington, D.C. For the 1966-71 period, this index showed an 8 percent annual rate of growth--much higher than the BLS PFI.

From this brief summary of available evidence on what fees other reimbursement programs pay, it appears that the Medicare method does relatively well in holding down the rate of physicians' fee increases.

### III. The Medicare Method of Reimbursement and the Acceptance of Assignment by Physicians

Although there is a provision for holding down physicians' fees paid by Medicare--reducing fees which are greater than the Medicare "reasonable " charge for the treatment--it must be handled carefully within the framework of the market for physicians' services. The danger is that the aged can be deprived of substantial medical insurance protection if (1) physicians' fees rise above the "reasonable" charge level and (2) physicians refuse to accept assignment of Medicare payment (of 80 percent of the "reasonable" charge with 20 percent coming from the patient).

#### A. The Net Assignment Rate Experience

Since the acceptance of assignment is a critical decision made by physicians which influences the amount of health insurance protection afforded the aged by Medicare, it is important to have a measure of the acceptance of assignment in general and to know why it varies.

The net assignment rate is computed for measuring the acceptance of Medicare benefit payments ("reasonable" charges) by physicians. It is the proportion of claims rendered by physicians and received by the Social Security Administration in which the physician has agreed to accept assignment. Net is used because bills for physicians' services in hospitals submitted by hospitals are excluded from the rate computation. The net assignment rate, computed beginning fiscal year 1969, is shown in Figure 1 along with the reasonable charge reduction rate--the proportion of assigned claims in which the physician has accepted assignment but receives a reduced payment because his bill is greater than the "reasonable" charge. 8/

Not only has the net assignment rate fallen to 56.4 percent from 60.1 percent, 61.2 percent, and 61.0 percent in fiscal years 1972, 1971, 1970, and 1969, respectively, but also significant increases in the reasonable charge reduction rate have occurred, with the rate rising from approximately 22 percent in the first quarter of fiscal year 1970 to 46 percent at the end of fiscal year 1971. In fiscal year 1972, the reasonable charge reduction rate seems to have leveled off at 45 percent. 9/

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8/Memorandum from John J. Carroll, Assistant Commissioner of the Office of Research and Statistics to Thomas M. Tierney, Director of the Bureau of Health Insurance on the "SMI Claim Assignment Rate, Fiscal Year 1972," December 20, 1972. (Appendix B).

9/Ibid., Table 1 and Figure 1.

The data are consistent with the hypothesis that physicians seeking higher fees over time for servicing Medicare patients refuse assignment, and thereby, refuse the risk that their charges will be reduced, in order to enable them to be paid more than their "customary" fee or the 75th percentile charge level.

Administrative and economic events are noted on Figure 1 which could have contributed to a decline in the net assignment rate. To begin with, on January 1, 1969, the reasonable charge levels were frozen at existing levels and two years later, on January 1, 1971, the highest charge allowed to be considered "prevailing" was set at the 75th percentile level (reduced from the 83rd percentile level) of the 1969 calendar year customary fee distribution. Then, the Federal Price Commission established the Medicare fee levels in effect on November 13, 1971, as base prices. As a result, for fiscal year 1973 increases in Medicare fee screens were limited to 2.5 percent in the aggregate. <sup>10/</sup> If physician dissatisfaction has been aggravated by these events, the decline in the net assignment rate could continue until more current data are used in setting the "prevailing" charge and/or the upper limits on increases in Medicare fees are lifted.

#### B. Factors Influencing the Acceptance of Assignment

Several factors influence the acceptance of assignment of Medicare benefits by physicians. In fiscal year 1972, the net assignment rate was particularly low in Ohio (30 percent) and Montana (31 percent), while Mississippi (81 percent) and Massachusetts (80 percent) came in at the higher end of the scale. In view of this variability among States, Research Triangle Institute, Center for Health Studies (RTI) was employed to undertake a pilot sample survey to determine the factors influencing the acceptance of assignment from the perspective of physicians in six States: New York, Massachusetts, California, New Jersey, Florida, and Ohio. <sup>11/</sup> The study found the

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<sup>10/</sup>Ibid., p. 2. These events are explained more fully in the memorandum found in Appendix B, which also contains information on the net assignment rate and its percentage change by State and carriers.

<sup>11/</sup>W. C. Eckerman; R. E. Mason; T. G. Virag; and J. T. Wakeley, "A Study to Determine Factors Physicians Take Into Consideration in Deciding Whether to Accept Assignment, Billing Arrangements Physicians Make to Cope with the Deductible and Coinsurance Features of Reimbursement, and the Nature of These Billing Practices," Research Triangle Institute, Center for Health Studies, Final Report, August 1972, Volume I: Study Design and Pilot Survey (Appendix C)

financial situation of the patient to be extremely important. In RTI's interviews of 314 physicians, the factor "considered" most often by physicians in all areas was the patient's ability to pay. If a patient appeared financially capable of paying the bill, his physician would be inclined to refuse assignment and to bill the patient directly and perhaps for more than the "reasonable" charge. In addition, a close "personal relationship with the patient" was a factor leading the physician to accept assignment, as was a large "size of bill" and "patients with Medicaid." 12/

Among the factors related to the Medicare program, as opposed to the patients themselves, the "assurance of payment" was always a highly considered program factor and positively motivated physicians to accept assignment. 13/ On the other hand, leading physicians to refuse assignment were the "patient's lack of understanding" of the program, the "complexity of the program," and, most importantly, the concern that the "Medicare allowance was likely to be less than the physician's charge."

In RTI's sample of physicians, many agreed that Medicare has resulted in an "overall increase in the number of patients," and well over half agreed that "less free medical service" is now given since Medicare began. 14/ Therefore, it appears evident that while the utilization of physicians' services by the aged has risen (this will be examined below), the degree to which physicians are called upon to play "Robin Hood" has fallen substantially.

Robert R. Nathan Associates also investigated the factors influencing the acceptance of assignment in 35 States. 15/ The net assignment rate for 1969 in each State was regressed on several variables thought to be potentially important. RRNA found the socioeconomic variables to be more important explanatory variables than the method-of-reimbursement variables. States with higher than average per capita incomes experienced lower net assignment rates, other variables held constant. "If state per capita income could be a proxy for the incomes of SMI enrollees, it would appear that where patients are more likely

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12/ Ibid., pp. 39-51

13/ Ibid., pp. 52-63

14/ Ibid., p. 90

15/ Robert R. Nathan Associates, Inc., Volume II, Part I, pp. 60-62 (Appendix A)

to have complementary health insurance or otherwise are better able to pay, assignment rates are lower." A high proportion of SMI enrollees bought-in by the State (usually through the Medicaid program) is associated with a higher net assignment rate--probably because the State Medicaid program will pay for the patient's deductible and 20-percent coinsurance portion and because these programs usually require mandatory acceptance of assignment.

If the basis for determining the "prevailing" charge is based on the carrier's "own" business only or on its Medicare business only, the net assignment rate is lower than if both are combined. One conjecture is that the combination yields fee levels closer to the "market rate," overall, than either used separately. Correspondingly, higher average allowed fees in 1969 encouraged the acceptance of assignment by physicians. States with higher proportions of their population 65 years and older living in cities larger than 100,000 persons had lower net assignment rates.

Factors which tended to reduce fee growth, such as the use of fee schedules, less frequent updating of customary charges, being a Blue Shield carrier, and recognizing physician specialty in determining "reasonable" fees, generally were associated with lower assignment rates, as might be expected, but their influences were not statistically significant. 16/

The studies by RTI and RRNA show that physicians respond to economic incentives (or disincentives), such as the patient's ability to pay a higher fee than Medicare's "reasonable" charge and a higher than average level of Medicare fees in some areas, when making decisions concerning their acceptance of assignment. In fact, they respond more to economic incentives perhaps than to differences in the carriers' methods of Medicare reimbursement. However, RRNA's model explains 60 percent of the total variation in the net assignment rate, leaving 40 percent to be explained potentially by other factors not included in the model.

#### C. The Disallowances of Physicians' Charges Under Medicare

Although many hypotheses have been supported in the two studies examined in the preceding section, this area of research into the acceptance of assignment has not been exhausted. One omission in particular involves the following question: Do physicians whose billed charges have been reduced more than those of other physicians refuse assignment more frequently?

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16/ Ibid., p. 60.

Both studies shed little light on this question but in the aggregate it can be seen, in Figure 1 of the Social Security Administration Memorandum, 17/ that as the reasonable charge reduction rate has risen, the net assignment rate has fallen.

During the first six years some toughening of administrative procedures has undoubtedly occurred as carriers have become more familiar with the Medicare method of reimbursement. In fact, it was the widespread slack in carrier application that permitted RRNA to analyze the influences of a variety of differences in methods of reimbursement. But other factors, such as the desire of physicians to keep charges rising at least as fast as business expenses in their practices and longer lags in determining the Medicare "customary" charge, along with this toughening, have led to an increase in the reasonable charge reduction rate over time and possibly to physicians refusing to accept assignment in more and more cases.

RRNA has investigated the proportion of physicians' total dollar charges under SMI reduced for exceeding the "reasonable" charge in 35 States for the year 1969 and found this proportion to be 5 percent, when all services are combined. In a multiple regression analysis of the variation in the percent reduction of total physicians' charges in 1969, RRNA succeeded in explaining between 36 and 50 percent of the variation. 18/ 19/

The percent reduction was higher for carriers which updated the "customary" charges less frequently (6-12 months or longer), for

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17/ SSA Memorandum from John Carroll to Thomas Tierney, December 20, 1972. (Appendix B)

18/ Robert R. Nathan Associates, Inc., Volume II, Part I, p. 64. (Appendix A)

19/ Social Security Administration data indicate that, due to controls applied more recently, the reduction of physicians charges for exceeding the "reasonable" charge was \$29 million or 11.2 percent of the total value of all claims processed to completion for which all or part of the charges were reduced on the basis of "reasonable" charge violations in September 1972. Further, some physicians' services were disallowed Medicare payment. These disallowances totaled \$30 million or 10.5 percent of the total dollar charges on all claims processed to completion on which any services were denied in September 1972.

Blue-Shield carriers specifically, and for carriers which recognized the physicians' specialty in determining the "reasonable" charge. For carriers who used a fee schedule of the ceiling type (as opposed to the relative value scale type), to determine benefits, the percentage reduction of physicians' charges was lower. A possible explanation of this finding is that the scheduled fees are more nearly mutually agreeable to physicians and carriers than "reasonable" fees determined through other methods. A greater proportion of whites in the aged (65 years and older) population was likewise associated with a lower percentage reduction.

According to RRNA's model, when a carrier's area has (1) a higher percent of Medicare enrollees not-bought-in by the State, and (2) a greater number of non-Federal medical specialty physicians per 100,000 population, the percentage reduction in physicians' charges is greater. These two findings are not surprising since a far greater percentage of claims are presented by assignment with respect to Medicare enrollees bought into SMI by the State government. Furthermore, because specialists probably charge a higher fee than general practitioners for the same service, they are more likely to have their charges rising above the "prevailing" level. 20/

Generally, the reduction of physicians' charges has increased strongly over time as measured by the reasonable charge reduction rate. The net assignment rate has fallen but not as sharply as the rise in the reasonable charge reduction rate. On the basis of the RRNA results, it is difficult to obtain a closer tie-in of the reduction in physicians' charges with the decrease in the acceptance of assignment. Some of the factors associated with a lower net assignment rate were also associated with a higher percentage reduction of physicians' charges: the percent of Medicare enrollees not-bought-in by States and the intermediary being a Blue Shield carrier. On the other hand, the carrier recognizing physician specialty tended to increase the net assignment rate and to increase the percentage reduction in physicians' charges.

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20/ Robert R. Nathan Associates, Inc., Volume II, Part I, p. 64 (Appendix A). In one equation, however, carriers which recognized physician specialty in determining the "prevailing" charge had a higher percentage reduction in physicians' charges. Indeed, this is puzzling. The only explanation that comes to mind is the possibility that the variables omitted from this equation (frequency of updating "customary" charges) were statistically very closely related to recognizing physician specialty and that recognizing physician specialty captured their influences.

D. Billing for Deductible and Coinsurance

The intended effects of the Medicare system have been that the beneficiaries of Medicare should have protection against high medical costs but should still be discouraged from the trivial use of physicians' services. The deductible and the coinsurance have been the principal means of discouragement. However, if the aged are not required by their physicians to pay the deductible and the coinsurance, a breakdown in the deductible coinsurance incentive mechanism occurs. Moreover, where a physician waives the collection of the deductible and coinsurance a serious question is presented regarding that physician's reasonable charge profile.

To gain information on the frequency of deductible/coinsurance forgiveness by physicians, RTI queried the physicians in their six-State sample who accept assignment on the difficulty they experienced in collecting the \$50 deductible and the 20 percent coinsurance. Physicians in Massachusetts and California had the most trouble with the deductible with roughly 23 percent of the sampled physicians having difficulty over 50 percent of the time. Consequently, 12 and 23 percent of the sampled physicians, respectively, in the two States have special techniques for handling the deductible, such as careful explanations of Medicare to the patient, delaying the bill so that another physician will collect the \$50 deductible, etc.

The New York physicians in the sample had the least difficulty in collecting the 20 percent coinsurance while physicians in Massachusetts had the most trouble. As many as 12 percent of the sampled physicians in California and Ohio use special techniques for handling the coinsurance, such as filling out the patients' forms, using a collection agency, not billing for it, etc. Although the sample does not reveal the practice as common, some physicians bill for the deductible but not for the coinsurance.

#### IV. The Medicare Method of Reimbursement and the Utilization of Physicians' Services

Before 1966 it was anticipated that the introduction of Medicare and Medicaid would loosen the floodgates of pent-up need for hospital and physician care resulting in tremendous increases in the utilization of hospital beds and of physicians' services. The increase in the demand for hospital services was strong but certainly not overwhelming since a shifting of hospital care away from those under 65 years and toward the aged occurred. 21/ Patient day rates per 1,000 persons for the aged rose from 2,420 in fiscal year 1965 to 3,547 in calendar year 1968 and, for persons below 65 years, fell from 950 to 873 in the same respective periods. 22/ Likewise the demand for physicians' services was not inundating due to the introduction of Medicare and Medicaid.

##### A. Physicians' Visits Generally

Analysis of two nationwide surveys of the aged taken before (1965) and after (1967) Medicare shows that the number of reported ambulatory medical service visits by the aged "declined slightly from 6.6 per person in 1965 to 6.1 per person in 1967." 23/ However, substantial shifts in the place of visit were reported--shifts away from visits at home, clinics, emergency rooms, and health centers to physicians' offices.

This same kind of change in the utilization of physicians' services was discovered in two telephone surveys of roughly 175 physicians before (1969-70) and after (1971-72) the Quebec compulsory universal medical insurance plan, covering the cost of all services provided by physicians, was effected on November 1, 1970. Telephone contacts with physicians decreased sharply; hospital and home visits declined substantially; but physicians' office visits rose 32 percent. 24/

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21/ Julian Pettengill, "Trends in the Hospital Use by the Aged," Social Security Bulletin, (July 1972), pp. 3-15. "During this period the proportion of total days of care received by aged persons increased from about one-fourth to roughly one-third, and the share received by the non-aged population declined similarly." p. 11.

22/ Ibid., p. 12. Data is from the National Center for Health Statistics, Series 10, for various years and based on noninstitutional persons.

23/ Regina Loewenstein, "The Early Effects of Medicare on the Health Care of the Aged," Social Security Bulletin, (April 1971), p. 13.

24/ Phillip E. Enterline, J. Corbet McDonald, Alison McDonald, Lise Davignon, and Vera Salter, "The Effects of 'Free' Medical Care on Medical Practice--The Quebec Experience," National Center for Health Services Research and Development, HSMHA grant number HS00469, (June 1972).

Table 2 -- Average number of physician visits, and distribution by place of visit, age, and sex: United States, Fiscal 1964 and Fiscal 1967

(Estimates based on interviews of a sample of the living, civilian, noninstitutional population; excludes in-hospital or nursing home visits.)

Place of visit and age	Both sexes		Male		Female	
	Fiscal 1964	Fiscal 1967	Fiscal 1964	Fiscal 1967	Fiscal 1964	Fiscal 1967
Total physician visits per person per year.....	4.5	4.3	4.0	3.8	5.1	4.8
Percent distribution.....	100.0	100.0	100.0	100.0	100.0	100.0
Office.....	69.8	71.8	69.3	70.4	70.2	72.8
Home.....	5.4	3.3	4.6	2.9	6.0	3.5
Clinic.....	11.9	9.3	13.0	10.1	11.1	8.7
Other✓.....	12.9	15.6	13.0	16.5	12.8	14.9
Under 65 years.....	4.3	4.1	3.8	3.7	4.9	4.6
Percent distribution.....	100.0	100.0	100.0	100.0	100.0	100.0
Office.....	70.7	71.5	69.8	69.4	71.4	73.1
Home.....	3.6	2.2	3.3	2.3	3.8	2.2
Clinic.....	12.4	9.8	13.5	10.7	11.6	9.1
Other✓.....	13.3	16.5	13.4	17.5	13.2	15.7
65 years and over.....	6.7	6.0	6.0	5.4	7.1	6.5
Percent distribution.....	100.0	100.0	100.0	100.0	100.0	100.0
Office.....	64.2	73.8	66.1	77.7	62.9	71.3
Home.....	17.3	10.5	14.0	8.0	19.5	12.1
Clinic.....	8.5	6.0	10.0	5.4	7.5	6.4
Other✓.....	10.1	9.7	10.0	8.9	10.2	10.2

1/ Other-company clinics, health units, telephone visits and unknown place.

Source: National Center for Health Statistics, Health Interview Survey, Series 10, and unpublished data.

In Table 2, the estimates of the National Center for Health Statistics also reveal the same pattern of physician utilization by the aged and, to a similar degree, by the non-aged U.S. population. The decline in physician utilization in fiscal year 1967 could be due to a lower incidence of acute respiratory illness in that period. However, in following years the number of physician visits per person per year for the aged continued at a rate below that for fiscal year 1964, as shown in Table 3.

Table 3.--Average number of physician visits per person,  
per year by age and sex 1/

Year	Age and sex					
	Male 65-74	Female 65-74	Both	Male 75+	Female 75+	Both
Fiscal 1963-64.....	5.6	7.0	6.3	7.0	7.5	7.3
Calendar 1967.....	5.2	6.0	5.6	5.1	6.3	5.8
Calendar 1968.....	5.4	5.7	5.6	5.5	6.2	5.9
Calendar 1969.....	5.5	6.6	6.1	5.5	6.7	6.2
Calendar 1970.....	5.7	6.2	6.1	6.2	7.1	6.7

1/ Estimates based on interviews of the living, civilian, noninstitutional population; excludes inhospital or nursing home visits.

SOURCE: National Center for Health Statistics, Health Interview Study, Series 10, various years.

Generally, in the period immediately following the introduction of Medicare, per capita use of physicians' services by the aged appears to have declined initially and to have shifted to the physician's office from other locations. These figures may be misleading however. What is missing from these statistics is information concerning the number of physician visits in hospitals and nursing homes. An even greater shift could have occurred into nursing homes than into physicians' offices. The National Disease and Therapeutic Index conducts physician surveys quarterly and the results, given below in Table 4, certainly show the possibility of such a shift but the figures cannot be put on a per capita basis. Nevertheless, it becomes clearer that the physician is giving more services in his office, and perhaps in hospitals and nursing homes, than before Medicare and Medicaid. Whether he is giving more services (visits) in total to each aged person is not clear from the data.

Table 4.--Total Physician Visits Per Year, By Place of Visit and Age of Patient

Fiscal year (July-June)	All visits (in millions)		Office visits (in millions)		Visits in hospital or nursing home (in millions)	
	Under 65 years	65 years and over	Under 65 years	65 years and over	Under 65 years	65 years and over
1966.....	1061.3	244.6	849.2	140.2	212.1	104.4
1967.....	1001.2	266.7	805.2	140.0	196.0	126.7

SOURCE: National Disease and Therapeutic Index, estimates based on visits during a 48-hour period to a panel of physicians reporting once each quarter-year.

To add some clarity to the overall view, the inference that physicians' visits per aged person in hospitals has risen can be drawn from the NCHS data on patient days of hospital care consumed by the aged. In fiscal years 1963 and 1964 the aged consumed an average 2,250 patient days per 1,000 persons in each year. By calendar years 1968 and 1969, the average patient day rate had risen to 3,350 per 1,000 persons, an increase of roughly 58 percent. <sup>25/</sup> Since it appears plausible that physicians visited their hospitalized patients as frequently in 1968 and 1969 as they did in 1963 and 1964, it is reasonable to conclude that physicians' in-hospital visits to aged persons, per 1,000 aged persons, rose at roughly the same rate, 58 percent.

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<sup>25/</sup> Julian Pettengill, p. 12. The data are from the National Center for Health Statistics, Series 10.

V. The Medicare Method of Reimbursement and Beneficiary Payments

Medicare SMI enrollees pay a monthly premium to the SMI trust fund which is matched by the Federal Government. States are permitted to pay SMI premiums on behalf of the aged receiving approved public assistance. The next two sections examine the proportion of the expenditures on physicians' services for the aged paid directly or indirectly by the aged since the beginning of Medicare SMI and the factors influencing SMI benefits paid per enrollee.

A. Total Physicians' Personal Health Care Expenditures Made by the Aged

The influence of SMI's payment of physicians' fee costs on the financial expenditures of the aged is seen in Table 5. After fiscal 1967, in which the Medicare and Medicaid programs began, the proportion of estimated total physicians' services financed by the aged (including SMI premiums paid by the aged) hovered around two-thirds until fiscal 1970. In that year the public proportion rose from one-third to almost two-fifths. To keep pace with rising physicians' fees and other institutional service costs, 26/ SMI premiums were increased from \$4.00 per month to \$5.30 beginning July 1970. 27/ As a result of the SMI premium increase, the prevailing physicians' charge level freeze, and other administrative measures, the private proportion of total physicians' service expenditures on the aged rose above two-thirds to 73 percent.

From fiscal 1968 to fiscal 1972, estimated total per capita expenditures on physicians' services for the aged rose by 46 percent, from \$121.17 to \$176.53. However, during the same period, the aged's private per capita physicians' services expenditure rose by 57 percent, from \$81.66 to \$128.53--the public per capita payment rising by 21 percent, from \$39.51 to \$48.00.

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26/ Services other than physicians' treatments covered by SMI include diagnostic tests, surgical dressings, rental of durable medical equipment, ambulance service, prosthetic devices, braces, and 100 home health visits. However, expenditures on physicians' services have totaled roughly 90 percent or more of the total Medicare SMI expenditures in every year since the beginning.

27/ The SMI monthly premium for fiscal 1974 is \$6.30 up from \$5.80 in fiscal 1973 and \$5.60 in fiscal 1972.

As shown in Table 5, most of the financing of physicians' services for the aged comes out of the wallet of the aged--SMI premiums, the amounts less than or equal to the \$50 deductible, the 20 percent coinsurance, payments by private health insurance policies of the aged (excluded from the table due to lack of information are the administrative costs and profits associated with private health insurance policies of the aged), and direct purchases. As a form of income redistribution, the SMI method of financing is not of great magnitude--\$48.00 per aged person in fiscal 1971. Nevertheless, SMI enrollment relieved the elderly of some of the burden of the rising costs of physician care from 1967 to 1971 but, as physician fees continue to rise, their burden relief may have been short-lived if Congress had not acted on this point. 28/

#### B. Factors Influencing SMI Benefits Paid Per Enrollee

The analysis of factors influencing the SMI reimbursement per enrollee in 1969, undertaken by RRNA, showed that enrollees received significantly higher per capita benefit payments if customary charges were updated every 6 to 12 months, where there were more specialty physicians per 100,000 population available, and in the West. Enrollees administered under Blue Shield carriers received higher benefits but not sufficiently greater for this factor to be statistically significant.29/

Surprisingly, enrollees in States having a greater proportion of their aged population over 75 years, ceteris paribus, received lower per capita benefit payments. This finding, as well as the others, did not change when the dollar per capita benefits were deflated to allow for differences among areas in physicians' fees. In view of the greater tendency for those persons 75 years and older

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28/ The Social Security Amendments of 1972 provided that "premiums would be increased only at times and by amounts that would be related to beneficiary's ability to meet the cost." The premium would be set equal to the lesser of (a) the actuarial rate representing one-half of the annual total benefit and administrative costs plus a small contingency reserve or (b) the most recently promulgated premium rate increased by the total percentage by which cash benefits had been increased across the board (whether by act of Congress or automatically under the provision in the Social Security Act which provides automatic increases in cash benefits under certain circumstances). Senate Committee Report 92-1230 IV. Provisions Relating to Medicare-Medicaid and Maternal and Child Health, pp. 180-181.

29/ Robert R. Nathan Associates, Inc., Volume II, Part I, p. 67 (Appendix 1

Table 5.--Estimated Personal Health Care Expenditures for the Aged  
on Physicians' Services, Fiscal Years 1967-72

Years	Amount (in millions)			Per Capita			Percentage		
	Total	Private	Public	Total	Private	Public	Total	Private	Public
1972									
Total.....	\$3,553	\$1,385	\$2,168	\$176.53	\$68.81	\$107.72	100	39	61
SMI Premiums Paid by Aged	---	+1,202	-1,202	---	+59.72	-59.72			
Total, after Adjustment..	3,553	2,587	966	176.63	128.53	48.00	100	73	27
1971									
Total.....	3,158	1,147	2,011	159.00	57.75	101.25	100	36	64
SMI Premiums Paid by Aged	---	+1,121	-1,121	---	+54.05	-54.05			
Total, after Adjustment..	3,158	2,268	890	159.00	111.80	47.20	100	72	28
1970									-33-
Total.....	2,824	878	1,946	143.67	44.67	99.00	100	31	69
SMI Premiums Paid by Aged	---	+839	-839	---	+41.71	-41.71			
Total, after Adjustment..	2,824	1,717	1,107	143.67	86.38	57.29	100	61	39
1969									
Total.....	2,487	851	1,636	127.64	43.68	83.97	100	34	66
SMI Premiums Paid by Aged	---	+827	-827	---	+42.41	-42.41			
Total, after Adjustment..	2,487	1,678	809	127.64	86.09	41.56	100	67	33
1968									
Total.....	2,340	932	1,408	121.17	48.26	72.91	100	40	60
SMI Premiums Paid by Aged	---	+645	-695	---	+33.40	-33.40			
Total, after Adjustment..	2,340	1,577	763	121.17	81.66	39.51	100	67	33
1967									
Total.....	2,045	1,306	739	108.16	69.07	39.08	100	64	36
SMI Premiums Paid by Aged	---	+613	-613	---	+32.41	-32.41			
Total, after Adjustment..	2,045	1,919	126	108.16	101.48	6.67	100	94	6

SOURCE: Barbara S. Cooper and Nancy L. Worthington, "Medical Care Spending for Three Age Groups," Social Security Bulletin, May 1973, U.S. DHEW, SSA.  
Unpublished data from the Department of the Treasury

to consume physicians' services (See Table 3), this result is unexpected and requires further research to determine its authenticity. One speculation is that the statistic measuring the agedness of an area is closely associated with one or more of the other explanatory variables, such as the number of specialty physicians, which captures the expected positive relationship between age and SMI reimbursement per enrollee.

## VI. Conclusions

Over the years Congress has been concerned that the Medicare program has contributed to the rise in physicians' fees and therefore has recommended that the Health Insurance Benefits Advisory Council study the effects of Medicare methods of reimbursement on physicians' fees, the acceptance rate of assignments by physicians and the out-of-pocket expenses of beneficiaries. On the latter point, the Medicare program has provided a basic floor of health insurance protection for the aged. With respect to the costs of physicians' services for the average beneficiary (including the deductible, coinsurance, and premium payments as well as other out-of-pocket expenses), the proportion of these costs being paid by the program has increased substantially. However, this proportion is too small to permit complacency and has been falling rather than rising since 1970.

The Council has found that in the past 3 years measures have been adopted which resulted in the establishment by carriers of more precise customary charge profiles and prevailing charge screens. These improvements have helped to slow the rate of increase in charges under Medicare. This has been a cooperative effort of Congress, the Social Security Administration, and the carriers.

Recommended alternatives to the present method of reimbursement under the Medicare program should include the following five principles which the Council feels are desirable:

1. Any changes in the reimbursement for physicians' services under the Medicare program should not encourage a reduction in access to physicians' services by the beneficiaries, i.e., physician participation should not be discouraged.
2. Any changes in the present method of reimbursement under the Medicare program should take into account the various forms of payment for health care in the private sector.
3. No method of physician reimbursement should categorize the beneficiaries in a manner of payment significantly different from the general public.
4. Beneficiaries should not be liable for physicians' fees beyond the deductible and coinsurance amounts.
5. Attempts to change the reimbursement method should carry the reasonable expectation that physicians' fees will be equivalent to the levels of other existing reimbursement programs.

## VII. Recommendations

In view of the continuing rise in the cost of Medicare and the relatively small proportion of the costs of physicians' services of the average beneficiary which is being met through the Medicare program, further experimentation is needed with respect to all three of the areas indicated in Congress' charge to the Council: methods of physician reimbursement, assignments, and the share of total physician costs which the beneficiary must assume. The Council is not prepared at this time to recommend any specific alternative. We suggest the following approaches:

1. Experimentation with the concept of "participating physicians" in the Medicare program should be undertaken by the Administration in selected areas. The objective of such experiments would be to evaluate the willingness of physicians to participate in the program and at the same time eliminate the need for beneficiaries to pay out-of-pocket more than the deductible and coinsurance.
2. Experiments with any reasonable type and form of payment for physicians' services, such as fee schedule, capitation, and relative value scale, should be encouraged under Medicare for physicians desiring to participate in such a project as long as the costs are likely to be the same or less than those derived from the reasonable charge formula under the existing law. In the design of such experiments, it is necessary to give full consideration to regional differences, inherent inequities, inflation, and other variables.

## A P P E N D I X E S

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### Appendix A

THE EFFECTS OF THE MEDICARE  
METHOD OF REIMBURSEMENT ON  
PHYSICIANS' FEES AND ON  
BENEFICIARIES' UTILIZATION

(April 1973)



THE EFFECTS OF THE MEDICARE METHOD OF  
REIMBURSEMENT ON PHYSICIANS' FEES  
AND ON BENEFICIARIES' UTILIZATION

VOLUME I  
SUMMARY OF PRINCIPAL FINDINGS

ROBERT R. NATHAN ASSOCIATES, INC.  
WASHINGTON, D.C.

APRIL 1973



THE EFFECTS OF THE MEDICARE METHOD OF  
REIMBURSEMENT ON PHYSICIANS' FEES  
AND ON BENEFICIARIES' UTILIZATION  
VOLUME I. SUMMARY OF PRINCIPAL FINDINGS

Submitted to the  
Bureau of Health Insurance  
Social Security Administration  
Department of Health, Education and Welfare  
Baltimore, Maryland

Contract Number SSA 72-2763

by  
Robert R. Nathan Associates, Inc.  
Washington, D.C.

April 1973

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## SUMMARY OF PRINCIPAL FINDINGS

### The Framework of Analyses

This investigation focuses on two major topics related to the method of reimbursement of Medicare Supplemental Medical Insurance (SMI) or "Medicare" Part B:

1. The effects of this method on physicians' fees, both the general level and the structure of fees charged by physicians
2. The effects on the beneficiaries, on utilization of physicians' services, on the costs borne by beneficiaries, and on beneficiaries' understanding of the program as an element of both utilization and out-of-pocket cost.

In the broadest sense, "the Medicare method of reimbursement" comprehends the entire system of statutory, administrative, and financial conditions for reimbursing beneficiaries for charges incurred in the use of physicians' services, and the arrangements among physicians, beneficiaries, financial intermediaries, and the Government for satisfying the conditions. In this study we focus on certain elements of the system:

1. The statutory entitlement of enrollees, in consideration of a monthly premium, to reimbursement of 80 percent

of "reasonable" charges for covered services, after the first \$50 in any year. (The deductible at the time of the study was \$50; it has since been raised to \$60)

2. The statutory and administrative standards of "reasonable charge," defined in terms of the "customary" fee of the individual physician for a specified service and the "prevailing" charge in the community

3. The practices of "Medicare" Part B carriers (typically commercial or nonprofit health insurance carriers) in determining "reasonable" charges and reimbursing the beneficiary (or, under certain conditions, the physician)

4. The reimbursement of these carriers by the Social Security Administration, and the regulations governing the determination of the "reasonable" charge to be "allowed" (i.e., approved for reimbursement)

5. Certain aspects of the financial transaction between the physician and the beneficiary whereby the physician may (a) accept the allowed charge as full payment and "assign" his bill to the carrier for direct reimbursement of 80 percent of the "allowed" charge; or, (b) bill the beneficiary for any agreed charge, in which case the beneficiary is responsible for the physician's bill and can claim reimbursement from the carrier of 80 percent of the portion that equals the "allowed" charge.

Although the \$50 "deductible" and the nonreimbursable 20 percent of allowed charges ("coinsured" by the beneficiary) are standard in the statute and in the administration, various circumstances and practices introduce variability in both. Some part of the deductible and of the coinsurance may be

reimbursed from insurances outside the system, most often by complementary insurance purchased by the enrollee from a private company or from a prepaid group plan. The "customary" and "prevailing" criteria of "reasonable" charges may be (and, in fact, were) applied differently by different carriers, updating more or less frequently, employing anywhere between the 75th and the 95th percentile tests for determining "customary" and "prevailing," etc. These variations in elements of the method of reimbursement from person to person and from carrier to carrier have been used in this study as a means of analyzing variations in out-of-pocket expenses and rates of utilization and in rates of change in physicians' fees. This study attempts to establish the extent to which variations within the Medicare method of reimbursement affected the observed variations in utilization and physicians' charges.

The study is concerned with the Medicare method of reimbursement as a whole; however, individual research questions determine which elements of the method are investigated at any time. The meaning of the term "method of reimbursement" can vary from one part of the investigation to another, but in any one context it is unambiguous.

The data used in the study are derived mainly from Medicare sources. Chiefly:

1. The "reasonable charge" statistics of physicians' actual and allowable charges for a 5 percent sample of enrollees
2. A classification of carriers according to certain procedures used in "screening" charges to arrive at allowable charges

3. The Current Medicare Survey, a household survey of medical experience of more than 4,000 Medicare enrollees, conducted monthly by the Bureau of the Census

4. Allowed charges for certain specified procedures for Medicare and non-Medicare patients from selected Blue Shield plans

5. Data from a variety of sources covering various medical service benefits using a variety of methods of reimbursement.

The Effects of the Medicare Method of  
Reimbursement on Physicians' Fees

Effect on Physicians' Fees  
Generally, 1952-69

The introduction of Medicare in 1966 coincided with the beginnings of a general inflation that was bound to affect the rate of change of physicians' fees. To measure the effect of the Medicare method of reimbursement on physicians' fees, it was necessary to allow for the effects both of the inflation and of the extension of insurance to 20 million people, most of whom were not previously insured for ambulatory medical care. Using the BLS index of prices of physicians' services from the Consumer Price Index (there being no other historical series of physicians' fees generally), it was found, by trial of several regression equations, that the most satisfactory predictor of price movement (annual percent change) in the years 1952-69 is an equation in which the price change is regressed on the rate of change in the CPI (national index, all items), the rate of change in the percentage of third-party (i.e., insured) payments, and a "dummy" variable differentiating the years before and after Medicare. Even so,

the dummy variable does not represent purely the effect of the Medicare method of reimbursement; it also represents the institutional effect of health insurance, universal for the first time, even for an age group, as well as other phenomenon concurrent with Medicare and not otherwise singled out.

The equation accounts for 88 percent of the variability in the price change over the 17 years. All three explanatory variables are highly significant and stable. The CPI term is a proxy for the effects of cost-push inflation, which involves not only physicians' efforts to protect real incomes but also changes in the relative price of physicians' services and substitution effects between them and other goods and services. The insurance term represents changes in demand for physicians' services; the dummy represents the changes arising from the introduction of Medicare per se, i.e., apart from its effect on the percentage of third-party payments. The total effect of Medicare -- including both insurance and institutional effects -- was to add nearly 3.0 percent to the annual rate of change in physicians' fees in most years after 1965. The institutional effect alone added about 1.76 percent.

#### Effects of Methods of Reimbursement on Medicare Physicians' Charges, 1967-69

Carriers varied in important particulars in the way in which they applied the "reasonable charge" determination at the start of the program, and these variations resulted in different rates of change in physicians' and allowed charges among carriers over time.

As might be expected, physicians' charges in a state<sup>1/</sup> vary widely, even for a well-defined service. Especially for

<sup>1/</sup> What is meant is a Medicare Part B carrier whose jurisdiction was identical with a state, since reasonable charge

Medicare procedures, the distributions of charges for a service have the typical, long right-hand tail of skewed distributions and are characterized by coefficients of variation that are relatively large (even allowing for the fact that they are not controlled for specialty and locality) and increasing through time. The wide, skewed distribution generates a tendency for lower prices, even though they are rising, to fall even farther behind higher ones. The greater the standard deviation of average charges for a carrier, the faster the rate of price increase. This tendency results, after a time lag, in higher values for "customary" and "prevailing" charges. The length of the lag is a function of the frequency of "updating," that is, how often the "customary" and "prevailing" charges are recalculated to take account of changes in "market prices" of physicians' services. (Charges in excess of those allowed for reimbursement in one period may enter into the calculation of customary and prevailing charges in subsequent periods.) Carriers that update at intervals of less than 6 months recorded a significantly faster rate of increase in average charges than those that updated at longer or irregular intervals. Similarly, carriers using the 80th to 95th percentile as the definition of "prevailing" experienced significantly more rapid price increases than those using the 75th percentile or other definitions.

The use of fee schedules by some carriers, on the other hand, had a significant dampening effect on price increases. This is true if the fee schedules take the form of dollar ceilings for specified procedures or the form of "relative value scales" in which fees are priced as multiples of the

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statistics are state-wide. All of the results derive from regressions on a sample of 35 state-wide carriers. Unfortunately, this sample excluded several important states with more than one carrier, notably, California and New York.

price of a basic specification or service and change as the base price changes. Relative value scales, generally, can help the physician make a more objective evaluation of the value of his services and prevent the physician from escalating his charges by subjective judgment.

In sum, it is clear that whatever the context of the carrier, the "toughness" of carriers' practices in screening fees has a significant effect on the rate of price increase: the more rigorous the screening criteria and procedures, the slower the rate of price increase.

Other factors besides differences in methods of reimbursement affected rates of price increase from 1967 to 1969. As noted earlier, the greater the variability of prices for a carrier (i.e., the broader the distribution), the greater the rate of price increase, as higher prices tended to "drag up" lower ones in the same market. It was one of the initial hypotheses of the study that the method of reimbursement would counteract this by restraining the rates of increase of the highest prices in the customary/prevaling test, and thereby encourage a tendency toward convergence. The evidence, however, indicates the contrary. The coefficients of variation tended to increase, especially in medical (as opposed to surgical) services, uniformly among all carriers. This, of course, is the obverse of the finding that methods of reimbursement based on fee schedules slow down price increases. For the same reason, a high proportion of Medicaid eligibles among the Medicare enrollees tended slightly to dampen price increases.

An influential and statistically significant relationship appeared in 1967-69 between inter-carrier variations in the level of prices and the rate of price increase. It was

hypothesized that, given two carriers equal in every respect except the level of average physicians' charge, the carrier with the higher average would experience less pressure to push up the charge from one period to the next. The evidence indicates that the averages of actual and allowed charges in 1967 weighted by the rates of nonassignment and assignment in 1968, respectively, were significantly -- and negatively -- correlated with the price increase from 1967-69; that is, holding socioeconomic factors and reimbursement methods constant, higher actual and allowed prices in the earlier year were associated with smaller price increases. This result implies that if all carriers had applied the same reimbursement methods in the past, then the differences in physicians' fees among carriers would have been less than observed.

#### Assignment and Method of Reimbursement

Variations among carriers in the method of reimbursement had relatively little effect on variations in the assignment rate. If the allowable charge computation was based on the carrier's Medicare enrollees alone, or if it was based on non-Medicare enrollees alone, the assignment rate was lower.

The principal determinants of the assignment rate that emerged from the study were state per capita income (negatively correlated with the assignment rate), and medical insurance coverage of the population and physicians per 100,000 population (positively correlated). The assignment rate was lower in urban than in rural places. Percentage of enrollees supported by the state buy-in program significantly improves the assignment rate. But these variables explained only about 60 percent of the total inter-carrier variability. As has been noted elsewhere (including the Research Triangle Institute

study for HIBAC), noneconomic and institutional factors are very influential in determining whether assignment rates are high or low. For example, the Social Security Administration decision not to require beneficiaries to pay physicians' bills as a precondition for reimbursement significantly increased the assignment rate.

One aspect of method of reimbursement that was significantly related (positively) to the assignment rate was whether the carrier differentiated between specialists and general practitioners in determining allowable charges. This suggests that the assignment rate will be higher to the extent that allowed prices are more closely geared to market prices. The same effect might follow from more precise and discriminating specifications as the bases of differentiating services within a class for price determination. (Whether this would be a better or worse policy is a separate question.)

#### Disallowed Charges

The method of reimbursement explained little of the inter-carrier differences in percent reduction of physicians' charges. Among Blue Shield carriers, among carriers recognizing specialties in determining reasonable charges (specialists often charging fees higher than allowed even for specialists), and among carriers updating at 6 to 12 month intervals, the percent reduction was higher. Where fee schedules were used, the disallowances were lower, of course, and for the same reason where a relatively high proportion of Medicare enrollees were covered by Medicaid.

### Variations in Benefits Per Enrollee

Here again the contribution of variations in method of reimbursement was relatively small. The frequency of updating was a significant factor, because more frequent updating leads to higher prices. Reimbursements per enrollee were higher in the West (all other variables held constant), where there were (relatively) more specialists, and for enrollees of Blue Shield carriers. On the other hand, benefits per enrollee were lower where the proportion of Medicare enrollees 75 years and over was higher, and where per capita income was lower. There is an interesting policy question raised by the fact that older, poorer people pay the same premium and receive lower benefits.

### Out-of-Pocket Costs and Utilization of Ambulatory Physicians' Care

#### Analytical Design

Utilization is defined in terms of ambulatory visits (at home, in physicians' offices or in clinics), and charges for such visits. The measure of out-of-pocket costs to the beneficiary is represented by the effective deductible and coinsurance rate.

The statutory deductible and coinsurance rates are fixed, but effective coinsurance rates are modified in individual cases by complementary insurance bought by the enrollee from private carriers. Thus, the effective coinsurance rate in any individual case may vary from 0 to 20 percent, depending on complementary coverage. In fact, the deductible could vary between \$0 and \$50 because of the carryover provision.

The analysis of utilization was based on data from the Current Medicare Survey, 1969. The dependent variables were visits, charges, and coinsurance rates. The independent variables were personal, social, and economic characteristics describing the CMS sample persons and their circumstances. The technique of the analyses was multivariate estimation and the calculation of expected values of the dependent variables. The following statements of results are understood to be qualified by "all other things held constant" including, among other variables, age group, self-assessment of health, and hospital experience.

The Influence of Out-of-Pocket Costs on Utilization of Ambulatory Physicians' Care

The probability that a sample person with no complementary insurance (\$50 deductible and 20 percent coinsurance) would meet the deductible was 38 percent. For those with some complementary insurance (that is, an effective coinsurance rate below 20 percent), the probability would increase to 60 percent.

For sample persons with no complementary insurance and no welfare status, the expected utilization rate of ambulatory care is 62 percent (i.e., 62 of 100 would use the service during the year); for those with complementary insurance, it is 87 percent. For sample persons with welfare status, it is 84 percent; for those with no welfare, 73 percent.

These findings reflect the generalized relationships that emerged from the study: that the effective coinsurance rate and deductible, especially the former, are the significant determinants of variations in ambulatory care visits and

charges. Utilization, as measured in ambulatory care visits, is higher at higher rates of coverage (lower out-of-pocket costs).<sup>1/</sup>

For purposes of exposition, we have standardized the socioeconomic variables on a "modal," or prototypical, enrollee. This is not an "average" but a composite of the commonest characteristics of persons covered by Medicare SMI:

A female 75 years or older, with family income of \$3,000, living in an urban community in one of the Northeast states, in a household of 2 or more, though nonmarried. White, with less than 9 years of education, not employed, not on welfare. Considers herself to be in better-than-average health; no limitations on her mobility, no hospital stay during the year, not living in an institution. The assignment rate in the area in which she lives is 58 percent.

The values in the findings which follow are those associated with these characteristics, but the observations can be generalized.

At all levels of deductible (within the range of experience), utilization increases as coinsurance declines. At \$25 deductible, a decline in the coinsurance rate from 18 to 8 percent is accompanied by an increase from \$47 to \$86 in (the expected value of) charges incurred in the year for ambulatory physicians' care; at \$50 deductible, charges increase from \$39 to \$73. Obversely, at all levels of coinsurance, as the deductible increases, utilization declines. With an effective coinsurance rate of 18 percent, expected charges incurred for ambulatory physicians' care would be:

<sup>1/</sup> The coinsurance rates employed were not the observed rates; rather, they were observed and interpolated rates purged of the effect of self-selection.

Deductible of \$25.....	Charge of \$47
Deductible of \$50.....	Charge of \$39
Deductible of \$60.....	Charge of \$33

(The same calculation applied to a deductible of \$85 would predict an expected value of \$16 per year in total charges incurred for ambulatory physicians' care; but this estimate is based on an extrapolation well beyond past experience.)

There is perhaps an interaction between coinsurance and deductible: for example, dropping the coinsurance rate from 18 to 15 percent increases utilization by about \$17 when the deductible is \$25; by \$15 when deductible is \$50; and by less than \$14 when deductible is \$60.

The elasticity of demand for ambulatory physicians' services with respect to the coinsurance rate (net price) varies with the effective coinsurance rate. For actual Medicare values of deductible and coinsurance in 1969, at \$3,000 family income, a 1 percent decline in the coinsurance rate produced an increase of about 2.5 percent in terms of charges incurred for ambulatory care; the elasticity is slightly higher when utilization is measured in terms of visits to physicians. The elasticity declines as the coinsurance rate (net price) declines, until at about 8 percent coinsurance rate, elasticity is nearly zero; that is, beyond some rather low net price, further reductions in the net price have little effect on demand.

Elasticities of demand with respect to coinsurance are higher when the deductible is higher: at a coinsurance rate of 18 percent and at \$85 deductible, the elasticity of demand would exceed -3.0 (that is, a 1 percent decline in the coinsurance rate would result in a 3 percent increase in utilization), compared to -2.5 at \$50. But at very low coinsurance

rates, variations in the deductible have little effect on elasticities (which are low, in any event).

Elasticities of demand with respect to deductibles, given the Medicare range of coinsurance rates, increase rapidly as the deductible increases; at 18 percent coinsurance, elasticity of demand rises from -0.12 at \$30 deductible to above -1.0 at \$60, and the analysis indicates that it might rise very steeply above that.

#### Effects of Some Socio-economic Variables

Utilization rates are affected not only by deductibles and coinsurance rates but, to a lesser extent, by socioeconomic characteristics of enrollees. In addition to the obvious relationships to health variables, utilization rates seem to be higher in urban than in rural communities, and higher among females. A tendency toward lower utilization among Negroes is discernible and is statistically strongly significant.

The demands for office visits and clinic visits differed between enrollees with no, and those with some welfare status:

Status	Percent using covered services during the year		
	All ambulatory physicians' visits	Office visits	Clinic visits
No welfare.....	74	68	18
Some welfare.....	83	71	27

Notwithstanding the reduced net price of services covered by Medicare, which gives enrollees greater access to services in doctors' offices, welfare patients, though using doctors'

offices relatively more than other Medicare enrollees, apparently continue to make much greater use of clinics also, even for covered services.

### Interaction of Income and Coinsurance

Both increased coverage and increased income as separate variables raise utilization (although the income variable is often statistically insignificant in many of its terms). However, the interaction between coverage and income is nearly always significant. For example, at \$50 deductible and at a coinsurance rate of 18 percent, the expected value of charges at \$1,000 income is 75 percent of the expected value at \$5,000; but at 10 percent coinsurance the expected value of charges is about the same at both incomes.

### The "Ignorance Hypothesis"

Little could be inferred from the analysis that would throw light on the hypothesis that the rate of utilization is affected by enrollees' understanding of the program and its workings. Cultural attitudes toward uses of medical care vary among the population in ways that go beyond the ability to fathom an insurance procedure. Certain differences in utilization rates suggest clues but not conclusions: other characteristics held constant, utilization rates were generally lower in rural areas; among enrollees with some welfare; among Negroes; among those with less than 9 years of education; and among the relatively older.

### Some Conclusions

1. The introduction of Medicare appears to have added about 3 percent to the average annual rate of increase in

physicians' fees in the period 1966-69. Of this, a little less than half may be attributed to the extension of coverage to 20 million people, and a little more than half to the "institutional" effects of Medicare, including the method of reimbursement.

2. The statutory criteria of "customary," "prevailing," and "reasonable" charges, even if rigorously applied by Medicare carriers, have the effect of providing physicians with both an incentive to "manage" fees and a means of validating them. Since market prices determine allowable charges for Medicare reimbursement, the increases in fees generated by Medicare demand become the basis for ever-increasing allowable charges except to the extent that administrative measures (such as lags and freezes imposed by Social Security) dampen or prevent this.

3. Strict application of uniform practices with respect to percentile designation of "prevailing," and to frequency and mode of updating "customary" and "prevailing" (the less frequent, the slower the price change), should have a significant impact on the rate of increase in actual Medicare charges. Adoption of fee schedules could have an even greater potential dampening effect.

4. Given the inelasticity of supply of physicians' services, any further massive extension of insurance coverage will have effects similar to those observed of Medicare unless these are anticipated and prevented by legislative and administrative actions.

5. When socioeconomic characteristics of enrollees are held constant, the two principal determinants of variations in ambulatory utilization of physicians' services are

the effective amount of the deductible and the effective rate of coinsurance. Together these account for a large part of out-of-pocket costs borne by beneficiaries for the purchase of ambulatory medical care. Considerations of financing apart, and viewed solely as the instrument of control of utilization, the coinsurance rate is distinctly the more influential in determining the amount of physicians' services purchased, within the range of experience. The range of utilization (charges) is very wide (all other variables held constant):

Deductible (\$)	Coinsurance rate (\$)	
	.18	.08
	---- charges ---	
25.....	46.84	85.92
60.....	32.74	63.62

Thus, even given the rigorous assumptions and the limitations of estimating, it would appear that by varying deductibles and coinsurance rates, health insurance for the aged can be varied from substantial (though not complete) coverage of physicians' charges to insurance that discourages use of physicians' services except for catastrophic illness.

6. To what extent do the deterrent effects of deductibles and coinsurance suppress trivial or frivolous uses of physicians' services, and to what extent do they discourage the bona fide use of needed services? We do not know. The average per capita number of ambulatory (including home) visits for Medicare enrollees has been close to six per year for several years. The average for members aged 65 and over of a prepaid insurance plan (not group practice) without deductible or coinsurance was about seven in 1964. The

average for a prepaid group practice plan varied from about six to about seven in the years between 1955 and 1970. Both of these were in New York City, where utilization may tend to be higher. There is nothing in this experience to indicate that, in the absence of a deterrent charge, "overutilization" will result.

7. Where Medicare is supplemented by Medicaid, persons on welfare may have zero, or near-zero, deductible and coinsurance. The proportion who used covered ambulatory services during the year was about the same for people with some welfare (84 percent) as for people with complementary insurance (87 percent), and both were about a third higher than among people with neither (62 percent). (But welfare status per se, abstracting from coinsurance, deductible, income and socioeconomic characteristics, was not a significant determinant of utilization.) These effects of differential coverage do not tell us whether the deterrent effects of deductible and coinsurance result in underutilization or, conversely, whether the removal of the deterrent results in overutilization; they tell us only that demand is sensitive to the net price of services in the range of the most prevalent coinsurance rates, but less and less sensitive as the net price approaches zero.





THE EFFECTS OF THE MEDICARE METHOD OF  
REIMBURSEMENT ON PHYSICIANS' FEES  
AND ON BENEFICIARIES' UTILIZATION

VOLUME II, PART I  
EFFECTS ON PHYSICIANS' FEES

ROBERT R. NATHAN ASSOCIATES, INC.  
WASHINGTON, D.C.

APRIL 1973



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Volume II, Part I  
EFFECTS ON PHYSICIANS' FEES

Submitted to the

Bureau of Health Insurance  
Social Security Administration  
Department of Health, Education and Welfare  
Baltimore, Maryland

Contract Number SSA 72-2763

by

Lien-fu Huang and Orest Koropeccky

Robert R. Nathan Associates, Inc.  
Washington, D.C.

April 1973



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## FOREWORD

This study originated in a congressional mandate, Sec. 224(b) of "HR 1" (P.L. 92-603), to the Health Insurance Benefits Advisory Council (HIBAC) to investigate and report to the Congress on the effects of the Medicare (Part B) methods of reimbursement on physicians' fees generally and on costs borne by beneficiaries. (Other inquiries required by Sec. 224(b), particularly concerning the assignment rate, are the subject of studies other than this.) Robert R. Nathan Associates, Inc., was selected for this study on the basis of competitive proposals, and a contract was concluded on October 13, 1971.

The work to be performed under this contract came to focus on two distinguishable subjects: one dealing with physicians' fees and the other with patients' utilization rates. These are the respective subjects of Parts I and II of this volume. In both cases the difficulties of isolating the effects of the methods of Medicare Part B required powerful and discriminating methods of analysis, for which econometric techniques were uniquely suited.

In view of the difficulty and complexity of the study, RRNA convened a technical advisory panel of experts who met from time to time to offer critiques and suggestions. Professors Frank Sloan and Irving Goffman of the University of Florida, Professor Enrique Arzac of Columbia University, Professor Richard Rosett of the University of Rochester, Mrs. Agnes Brewster, and Stephen J. Harris served in this capacity. HIBAC also designated a committee under the chairmanship first of Professor Charles L. Schultze of the University of Maryland, and then of Jay Reibel, M.D., to oversee the study and to review progress at intervals.

We are greatly indebted to officials of the Social Security Administration, particularly to Raymond Johnson, the

project monitor; Howard West, Aaron Krute, Eugene Stickler, Nathaniel Pigman, Dorothy Rice, and Newton Dikoff of the Office of Research and Statistics; and Irwin Wolkstein and Robert Krouse of the Bureau of Health Insurance. P. Buonsignore supervised the preparation of the special tape files, and M. Moorhead carried out all programming for the testing and estimating for Part II of this volume.

This study, like any piece of institutional research, is the collaborative effort of many people. The principal investigators were Dr. Orest Koropecy and Dr. Lien-fu Huang, who together designed and executed the entire study. Insofar as they divided the work, Dr. Koropecy assumed primary responsibility for the design and continuity of the analysis of the various aspects of utilization (Volume II, Part II); Dr. Huang, of the aspects of physicians' fees (Volume II, Part I). Dr. Koropecy, as a full-time permanent staff member of RRNA, served in addition as Project Manager, with overall administrative as well as technical responsibility.

Other RRNA staff members who contributed significantly were Dr. E.W. Shomo, in the design stage; L. Bertman, in the preliminary work on price analysis; and M.C. Yang, N. Chow, J. Wu, and D. Harper in the statistical work.

We wish to acknowledge with thanks the cooperation of Dr. Edward Mills of the National Association of Blue Shield Plans, and the Blue Shield Plans of Michigan, Kansas, and Maryland for providing data.

We hope this study will be useful not only to HIBAC and the Social Security Administration but to all those who are wrestling with the important and difficult technical and policy issues in respect of health insurance.

Edward D. Hollander.  
Senior Vice President  
Robert R. Nathan Associates, Inc.

## I. DEFINITION OF THE MEDICARE METHOD OF REIMBURSEMENT

### Two Major Research Questions

Our report attempts to investigate two major questions raised by the implementation of Medicare Supplemental Medical Insurance (SMI), or Medicare Part B. More specifically, the focus is on the method of reimbursement of Part B. (Later, we will be distinguishing between the effects of Medicare as medical insurance and the effects arising from the Medicare method of reimbursement.)

The two principal fields of investigation are:

1. The effects of the Medicare method of reimbursement on physicians' fees, both the general level and the structure of fees charged by physicians.
2. The effects on the beneficiaries, on utilization of physicians' services, on the costs borne by beneficiaries, and on beneficiaries' understanding of the program as an element affecting both utilization and out-of-pocket cost.

### The Elements of the Method

In the broadest sense, the "Medicare method of reimbursement"<sup>1/</sup> comprehends the entire range of statutory,

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<sup>1/</sup> Excerpts from the "method" as it is presented to the enrollee in concrete instances:

If you and your doctor agree, Medicare will pay him directly. This is the assignment method. You do not submit any claim, the

administrative, and financial conditions for reimbursing beneficiaries for charges incurred in the use of physicians' services, and the arrangements among physicians, beneficiaries, financial intermediaries, and the Government for satisfying the conditions. Among the principal elements of the method are:

1. The statutory entitlement of enrollees, in consideration of a monthly premium, to reimbursement of 80 percent of "reasonable" charges for covered services, after the first \$50 in any year.<sup>1/</sup> (The deductible recently has been raised to \$60; during the period studied it was \$50.)

2. The statutory and administrative standards of "reasonable charge," defined in terms of the "customary" fee of the individual physician for a specified service and the "prevailing" charge in the community.

3. The functions of Medicare Part B carriers (typically commercial or nonprofit health insurance carriers) in determining "reasonable" charges and reimbursing the beneficiary (or under certain conditions, the physician).

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doctor does. All you do is fill out Part 1 of this form [SSA-1490] and leave it with your doctor. Under this method the doctor agrees to accept the charge determination of the Medicare carrier as the full charge; you are responsible for the deductible and coinsurance. Medicare can also pay you directly - before or after you have paid your doctor. If you submit the claim yourself, fill out Part 1 and ask your doctor to fill out Part II. Acceptance of an assignment requires the physician (or supplier) to accept the charge determination of the Medicare carrier as his full charge for the service. (Department of Health, Education, and Welfare, Social Security Administration, "Request for Medicare Payment," Form SSA-1490 (10-69), U.S. Government Printing Office, 1971.)

<sup>1/</sup> Insofar as the deductible and the coinsurance rate apply only to covered services and reasonable charges, they are properly elements of the method of reimbursement. Beneficiaries cannot meet the deductible by using noncovered services; and they cannot be reimbursed for any part of charges found to be in excess of what is allowed as "reasonable." But insofar as the deductible and coinsurance are instruments

4. The reimbursement of these carriers by the Social Security Administration, and the regulations governing the determination of the "reasonable" charge to be "allowed" (i.e., approved for reimbursement).

5. Certain aspects of the financial transaction between the physician and the beneficiary whereby the physician may either (a) accept the allowed charge as full payment and "assign" his bill to the carrier for direct reimbursement of 80 percent of the "allowed" charge, or (b) bill the beneficiary for any agreed charge, in which case the beneficiary is responsible for the physicians's bill and can claim reimbursement from the carrier of 80 percent of the portion that equals the "allowed" charge.

#### Variation in the Method

In certain respects, it would seem that there would not be the basis of an analytical economic investigation of the Medicare method of reimbursement, or, at least, of many interesting hypotheses that suggest themselves with respect to it. The deductible is set uniformly at \$50; the coinsurance rate is set uniformly at 20 percent. The physician's fee ought to be screened in the same way by every carrier. In view of the absence of variability in the principal elements, there would be no way to measure the effects of the method of reimbursement from the effects of Medicare as such.

Fortunately for purposes of the research, this invariance turns out to be by no means absolute. The deductible can in fact vary between zero and \$50, primarily because of the provision permitting carryover of deductible from year to year, but also because it may be reimbursed from insurances outside the system, e.g., private insurance companies offering complementary insurance, Medicaid, prepaid group plans. The coinsurance rate can vary between zero and 20 percent because the nonreimbursable 20 percent can also be reimbursed, wholly or in part, by insurance outside the system. In addition, "reasonable" charge determination as envisaged by Medicare was not uniformly practiced in the 1966-69 period.

of controlling the use of services, they are more properly elements of Medicare as insurance.

It took some time for all of the Medicare Part B carriers to understand the customary-prevailing-reasonable standard (CPR), and to develop the data for screening a physician's charge accordingly. In the meanwhile, CPR criteria were applied differently by different carriers, substituting fee schedules for "customary" charges, updating them more or less frequently than prescribed, employing anywhere between the 75th and 95th percentile test for determining "prevailing," etc.

Lastly, carriers vary in experience with respect to the assignment rate, benefits per enrollee, the percentage by which physicians' charges on the average are reduced, and the percentage of physicians' bills that are reduced.

These variations and divergences in the elements of the Medicare method of reimbursement, from person to person and from carrier to carrier, made it possible to reach certain conclusions in this study about the effects of the method of reimbursement on physicians' fees and of out-of-pocket expenses on utilization of physicians' services.

#### The Aims of Research and the Method

Needless to say, it is easy to employ the term "Medicare method of reimbursement" in an ambiguous manner in which it could mean anything from an allusion to the CPR reimbursement of physicians to all elements of the method taken together.

In the course of this study we became convinced that the particular research questions should determine the definition of the term. As the aims of research differed, so the meaning of Medicare method of reimbursement could differ from one investigation to the next. But in any one context, the term was unambiguous. Consider: the method of determining the allowed charge may influence fees; the latter, along with the coinsurance rate, may in turn influence utilization. The method of determining the allowed charge may also influence the assignment rate; and the latter, along with fees and the coinsurance rate, may in turn influence utilization. How fruitless such research will be if the Medicare method of reimbursement is not defined precisely or if its elements are not distinguished from one another.

The deductible, the coinsurance rate, assignment, and the method of determining the allowed charge are not the whole of the Medicare method of reimbursement defined comprehensively. But a total definition does not lend itself to the attainment of research aims; only narrowed, unambiguous definitions prove useful.

### Important Sources of Data

The data used in this investigation are mainly statistics on the Medicare program developed and maintained by the Office of Research and Statistics, Social Security Administration. (They are comprehensively described in A. Krute and others, Statistical Elements of Medicare, Social Security Administration, Office of Research and Statistics, September 1968.) Among our sources are:

1. The "reasonable charge" statistics of physicians' actual and allowed charges for a 5 percent sample of enrollees
2. A classification of carriers according to procedures used in "screening" charges to arrive at allowed charges (these data originated in the Bureau of Health Insurance, Social Security Administration)
3. The Current Medicare Survey, a household survey of utilization experience of more than 4,000 Medicare enrollees, conducted monthly by the Bureau of the Census
4. Actual and allowed charges for specified procedures for Medicare and non-Medicare business from selected Blue Shield Plans
5. Data from a variety of sources using alternative methods of reimbursement.

Appendixes A and B treat in detail the chief statistics that were employed, being variable name dictionaries giving sources and years, discussing the preparation of data in the case of the Current Medicare Survey tapes, noting adjustments, presenting additional tables, etc. Appendix A handles the Current Medicare Survey; appendix B, the "reasonable charge" statistics and some of the other sources.

## II. THE EFFECTS OF MEDICARE METHOD OF REIMBURSEMENT ON PHYSICIANS' FEES

### "If There Had Been No Medicare...": Physicians' Fees Generally, 1952-69

In the second part of the 1960's, the overall level of physicians' fees rose sharply. It so happens, also, that the inflation accelerated in this period and that Medicare Part B was enacted, extending up to 80 percent coverage for physicians' bills to some 20 million aged persons, many of whom had previously had no health insurance protection. In addition, the Medicare legislation provided that the basis of reimbursement for physicians' fees would be the "reasonable" fee-for-service charge, considering the physicians' customary charge and the charge prevailing in the community. The econometric model we are going to describe was developed to separate these and other influences from one another, to measure their effects on the variation of the physicians' fees and to point to policy inferences.

The model is formulated in terms of annual percentage changes for the years 1952-69. The dependent variable is the annual percentage change in the Bureau of Labor Statistics physicians' fee index component of the Consumer Price Index. The factors whose marginal or additional influence on the overall level of physicians' fees are assessed are:

1. The rate of change in the Consumer Price Index (CPI), representing the general inflation. From the point of view of the physician, inflation produces two effects: (a) a change in the relative price of his services and substitution of them for other goods and services; and (b) an increase in the prices of the elements of his operating cost. The correlation of CPI charges with the dependent variable will be said to represent a cost-push effect on physicians' fees.

2. The rate of change in the percentage of third-party payment for medical services (which includes the insurance benefits from the insurance companies and the health expenditures subsidized by governments).

3. The rate of change in the percentage of population insured for medical expenses.

4. The rate of change in the number of people insured. (Variables 2 through 4 may be considered alternative measures of insurance factors; they include all insured, those under 65 as well as those 65 and over.)

5. The rate of change in per capita income. (The insurance variables and per capita income represent demand-pull effects on physicians' fees.)

6. The rate of change in physicians per 100,000 of population (the supply term).

7. A dummy variable representing the years before and after the introduction of the Medicare program.

Our analytical technique is Multiple Least-Squares regression. Table 1 furnishes a summary of the regressions we considered.

Earlier preliminary results indicated that the period 1966-69, or the years since the introduction of Medicare, marked a departure from past trends in the BLS physicians' fee index, the CPI and the percentage of third-party payment. The fee index increased by 3.3 percent per annum on the average in 1952-60 and by 2.8 percent in 1961-65; in 1966-69 it averaged 6.3 percent per annum. The CPI increased by 1.5 percent in 1952-60 and by 1.3 percent in 1961-65; in 1966-69 it averaged 3.8 percent per annum. The percentage of third-party payment increased by 5.4 percent in 1952-60 and by 1.5 percent in 1961-65; it averaged 11.2 percent per annum in 1966-69. Physicians' fee index inflation factors and insurance benefits simultaneously had sharp increases after 1966. The multiple regression technique was used to determine their cause-effect relationships.

Of the eight equations shown in table 1, we judge equation 3 to be the best. Before discussing this equation in detail, let us look at the other equations both for what they have to tell us and for how they compare with equation 3. Equations 7 and 8 are similar to equation 3; the first

Table 1. Equations Explaining the Rate of Change in Physicians' Fees

Equa- tion number	Constant	Rate of change in CPI (infla- tion factor)	Rate of change in pct. of third party payment	Rate of change in pct. of pop. in- sured	Rate of change in no. of pop. in- sured	Dummy	Rate of change in per capita income	Rate of change in phys. per 100,000 pop.	R
1.....	3.1386					3.2014 (.3812)			0.897
2.....	2.9047		.0581 (.0308)			2.7829 (.4178)			.911
3.....	2.3174	.3682 (.1306)	.0756 (.0262)			1.7635 (.5006)			.940
4.....	1.7876	.7013 (.1198)	.1244 (.0295)						.893
5.....	1.928	.394 (.132)	.0831 (.0269)			1.415 (.587)	.0875 (.079)		.9413
6.....	1.95	.394 (.137)	.0837 (.028)			1.378 (.64)	.0757 (.103)	.0535 (.282)	.9364
7.....	2.133	.354 (.132)		.129 (.047)		2.001 (.473)			.938
8.....	1.912	.353 (.129)			.128 (.044)	2.125 (.445)			.941

Note: Entries in parentheses denote standard errors.

employs "the rate of change in the percentage of population insured," and the second, "the rate of change in the number of population insured", in place of "the rate of change in the percentage of third-party payment." Otherwise, the three equations are the same. The coefficients of the insurance factor and the dummy variable in both equation 7 and equation 8 are larger than equation 3. However, the coefficient of the rate of change in the CPI is practically the same in the three equations, as well as the value of the multiple correlation coefficient. Equation 3, we feel, is the most satisfactory equation in terms of economic formulation and for interpretation. Chart 1 depicts how well equation 3 replicates actual experience; chart 2 similarly depicts equation 8.

The supply<sup>1/</sup> of physicians has no statistically significant impact on the rate of change in physicians' fees generally. Although the variable is not significant, one would expect its sign to be negative, indicating that an increase in the relative supply of physicians tends to ease pressures causing the BLS physicians' fee index to rise. Here the sign is positive.

The rate of change in per capita income, although somewhat more meaningful, also has no statistically significant impact. Per capita income changes would act on physicians' fees by shifting the demand curve for physicians' services. Given the fact that to some extent the demand for health care is a matter of necessity, one cannot expect this income elasticity of demand to be high. The establishment of programs like Medicare and Medicaid has further reduced

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<sup>1/</sup> Equations 1-3, 5, 6 can be regarded as a stepwise multiple regression. Step one (equation 1) introduces a dummy variable representing all years before 1966 by zero (0) and all years from 1966 by one (1). The time dummy is chosen first because it has the highest simple correlation with the dependent variable. Step two (equation 2) adds the influence of the extension of health insurance coverage; step three (equation 3) adds the cost-push effect of general inflation. The regression coefficients of equation 3 are highly significant, and their signs are as expected; then, step four (equation 5) adds the influence of another demand-pull variable, per capita income; finally, step five (equation 6) adds the relative supply of physicians. The sequence of values of the important multiple correlation coefficient is 0.897, 0.911, 0.941, 0.936.

Chart 1. Rate of Change in Physicians' Fees

$$\hat{Y} = 2.317 + 1.762D + 0.368X_1 + 0.076X_2$$

(.27)      (.50)      (.131)      (.026)

$$\bar{R} = 0.9404$$

Y = Rate of change in physicians' fee index  
D = Medicare dummy. Before 1966, D = 0; 1966 and after, D = 1  
X<sub>1</sub> = Rate of change in consumer price index  
X<sub>2</sub> = Rate of change in third-party payment/total

If no Medicare  
temporal shift

If no Medicare

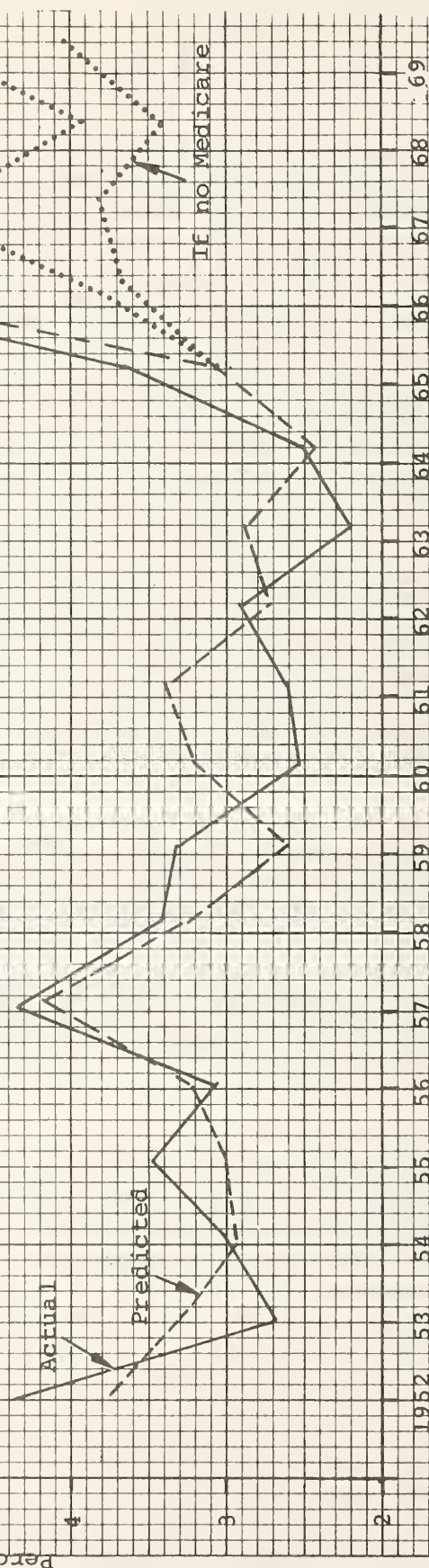


Chart 2. Rate of Change in Physicians' Fees

$$\hat{Y} = 1.91248 + 0.352695X_1 + 0.128108X_2 + 2.12478D$$

$$(.364) \quad (.129) \quad (.044) \quad (-.445)$$

$$\bar{R} = 0.941$$

Actual

Predicted

If no Medicare  
temporal shift

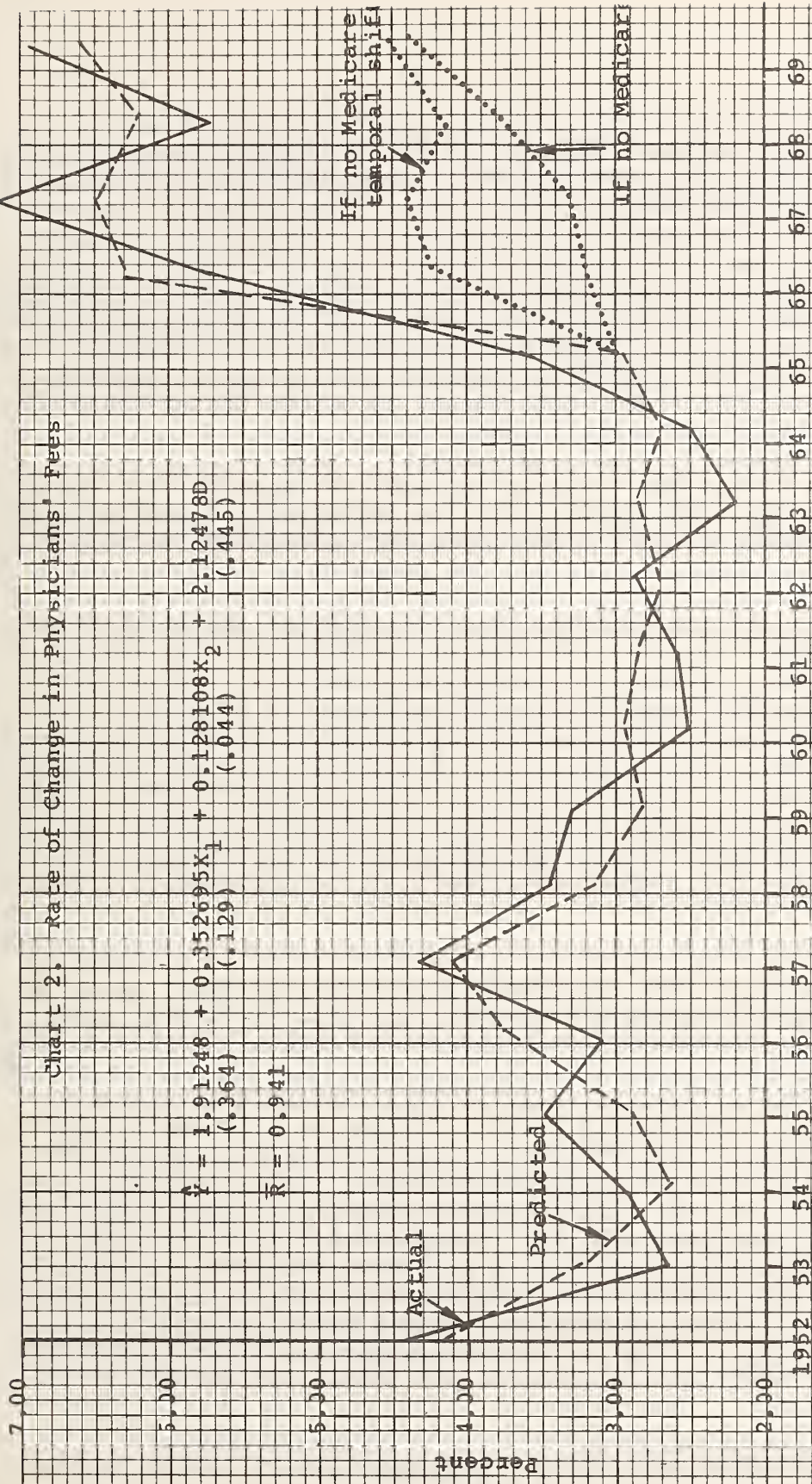
If no Medicare

Y = Rate of change in physicians' fee index

X<sub>1</sub> = Rate of change in consumer price index

X<sub>2</sub> = Rate of change in number of population insured

D = Medicare dummy. Before 1966, D = 0; 1966 and after, D = 1



the dependence of demand on income. Probably, then, it is not surprising that the effect of per capita income changes proved not significant.

One may note that as the per capita income and supply of physicians' variables are added to equation 3, the coefficients of the three independent variables of equation 3 retain their high significance and do not change very much. This implies that the roles played by these three variables are very stable and significant.

In step one (equation 1) we see what is gained by employing a dummy variable to represent a temporal effect; that is, the trend over time: 80 percent of the variation in the annual change in the fee index is explained by it alone. Equation 4, which drops the dummy variable, indicates what it contributes that is not already contributed by cost-push and demand-pull effects. True, the multiple correlation coefficient falls only slightly, from 0.940 to 0.893. But the coefficients of the inflation and insurance factors are very different from equation 3; the first practically doubles, while the second becomes about 1 1/2 times as great. This suggests that without the dummy the coefficients of these two variables will be seriously biased, and that the Medicare factor has a very important impact on the escalation of physicians' fees.

In equation 3, the coefficient of the time dummy is clearly significantly different from zero. A distinction between two periods, 1952-65 and 1966-69, is a factor in the explanation of physicians' fee behavior in the whole period 1952-69. The effect of this is that the relationship between rates of inflation and of extension of health insurance coverage, on the one hand, and changes in physicians' fees, on the other, shifts in 1966-69. To illustrate: given zero rates of inflation and of health insurance extension throughout the 1952-69 period, the BLS physicians' fee index still would rise by 2.3 percent per annum in the 1952-65 period (its underlying trend, so to speak, in the period); but, in the 1966-69 period, it still would rise by 4.1 percent per annum. This constant difference between the two periods of roughly 1.8 percent per annum is brought about by the time dummy. The rates of inflation and health insurance extension did, in fact, change, but the additional 1.8 percent per annum growth in the BLS physicians' fee index between the two periods is over and above what can be accounted for by their impact.

The 1966-69 period coincides with the existence of the Medicare program. (It is of course concurrent also with all other social phenomena that came into existence in 1966, remained in existence in the period, and could be casually related to physicians' fee behavior.) Medicare not only brought a good deal of health insurance to the aged; it also reimbursed the aged in a certain way and directed intermediaries (the Part B carriers) to determine reimbursable charges on a certain basis. The effect of Medicare qua insurance is accounted for by the insurance variable. The statistical significance of the time dummy suggests strongly that this coefficient is quantifying partly, if not exclusively, the effect on physicians' fees of the other dimension of Medicare -- its method of reimbursement. Although it would not be correct to infer that the temporal effect quantifies the pure effect of the Medicare method of reimbursement on the general level of fees, one may broadly interpret equation 3 as separating the effect of Medicare qua insurance from the effect of Medicare qua method of reimbursement.

Equation 3 replicates actual experience well; the approximations are especially good since 1965 (chart 1). In view of this, let us employ it as a reference to explore two questions:

1. What would have happened to physicians' fees generally if there had been no Medicare, i.e., no health insurance for the aged and, by implication, no Medicare method of reimbursement?

2. What would have happened if the aged had acquired all the health insurance coverage they acquire under Medicare but without a Medicare program, i.e., health insurance for the aged but no Medicare method of reimbursement?

No Medicare in the sense of the first question would have meant an annual rate of change in the BLS physicians' fee index that would have been about 3 percent lower than it actually was in the period 1967-69 (2 percent lower in 1966). An additional 3 percent rise in physicians' fees per annum might be termed the total impact of Medicare. The path that fees might have taken in the absence of Medicare is labeled "If no Medicare" on chart 1.

The answer to question 2 is simply the value of the coefficient of the time dummy. The Medicare method of reimbursement alone may have contributed 1 3/4 percent per annum

to the rise in physicians' fees. Or, as the line labeled "If no Medicare temporal shift" shows; the rate of change in physicians' fees might have followed a path about  $1\frac{3}{4}$  percent lower than it did. The total impact of Medicare on the overall level of fees could be broken down as  $1\frac{1}{4}$  percent per annum being due to Medicare qua insurance, and  $1\frac{3}{4}$  percent per annum being due to Medicare qua method of reimbursement.

Chart 2 depicts essentially similar relationships. Equation 8 is employed as predictor. The total effect of Medicare is not so high, say, a 2.5 percent per annum additional rise in physicians' fees. The effect of the Medicare method of reimbursement dominates: it is 2.1 percent per annum, leaving about  $1\frac{1}{2}$  percent per annum to Medicare as insurance.

#### Methodological Note: Three Alternative Models

Three other models were tried:

1. Replacing the rate of change (annual growth) of each variable by the actual value

2. Employing a linear price adjustment (this Koyck model will receive further attention in the following section)

3. Treating the insurance factor as an endogenous variable and employing Two-Stage Least Squares or other simultaneous-equation estimating techniques.

Let us mention some of the drawbacks under each in turn.

The first alternative runs into the problem of extreme multicollinearity among the independent variables, making it impossible to distinguish their separate effects.

The second alternative regresses the current year's physician's fee on the previous year's and on the other variables (using their actual values). No one will be surprised to learn that the previous year's fee explains a very

high percentage of the variation in the current year's fee. But it is hard to believe that inflation and insurance-related factors play no role.

The model we employ is superior to these two alternatives because the multicollinearity problem is substantially reduced, making it possible to isolate through statistical inference the effect of many of the factors.

Turning to the alternative of a simultaneous-equation model, it could be argued that the coefficients obtained are biased and inconsistent because the percentage of third-party payment is in fact an endogenous variable in the health-care system of relationships.

Where the number of observations is large, simultaneous-equation methods will improve the consistency of estimates. However, Monte Carlo Studies<sup>1/</sup> show that if the sample size is relatively small, the results obtained from the Ordinary Least Squares (OLS) method usually are not worse than the results obtained from Two-Stage Least Squares (2SLS) or other simultaneous-equation methods. OLS usually gives smaller standard deviations and greater precision for regression coefficients in the case of small samples, although the bias may be larger than that obtained from simultaneous-equation methods. If we use the mean square error (MSE) to measure the quality of a regression coefficient, OLS, in a case like ours, consistently gives the better result.

### Medicare Physicians' Fees: 1967-69

#### Factors Influencing Increases

##### The Determination of Reasonable Charges

We pass from a consideration of the behavior of Medicare physicians' fees generally to a consideration of the behavior of physicians' fees under Medicare, and we concentrate our attention on an element of the Medicare method of

<sup>1/</sup> I. Johnston, Econometric Methods, 2 ed. (New York: McGraw Hill Inc., 1963), pp. 408-420.

reimbursement that we believe is at the heart of that behavior: the criteria adopted for the determination of "reasonable" charges. Table 2, in its first row, gives an indication of the magnitude and range of changes in Medicare physicians' fees, distinguished by census regions. We will refer to this table again when we analyze the determinants of the other aspects of the method of reimbursement.

The basic goal of the Medicare program is to lift the major portion of the economic burden of health care from the aged and thereby give them the same chance of satisfying their health care needs as is given others by adequate insurance or income. "In line with this basic goal, payment for medical services on behalf of Medicare beneficiaries was designed to meet the going price for these services."<sup>1/</sup> The "going price" was to be determined by the application of reasonable charge criteria embodied in the law. (Implicit here is the assumption that the determination of the going price by a set of criteria will not affect its behavior. These determinations would simply reflect the going price; they would not affect it. The previous section throws doubt on this assumption. Reasonable charge determinations could both reflect and influence physicians' fee behavior.) Neither the administrative systems nor the data required to implement the customary and prevailing charge criteria embodied in the law existed at the start of the program. "As a result, it was necessary to begin processing claims on the basis of the best systems [Medicare Part B] carriers were initially able to develop using data available." Not only was the Medicare program committed to the dubious goal of "gearing program payment to the going price for physicians' services"; but also, it did not even have the technical basis for doing so. By 1970, the Social Security Administration was still trying "...to achieve...full implementation of the reasonable charge criteria in the law and...in a way that...inhibits rather than encourages fee escalation...to improve application of reasonable charge criteria...[and to refine] the guidelines followed by the carriers...." (This is said not to criticize the Social Security Administration, but to describe the difficulty of the task it faced.) Inherent in trying to pay the going price for medical services according to certain determinations or methods of reimbursement is the fact that it is all but impossible to inhibit the escalation of this price.

<sup>1/</sup> All full or partial quotations in the next few paragraphs are from a Bureau of Health Insurance, Social Security Administration, staff paper dated January 10, 1970.

Table 2. Summary of Medicare Part B Carrier Statistics: Rate of Change in Physicians' Charges, Assignment Rate, Supplementary Medical Insurance (SMI), Reimbursement per Enrollee, Reduction in Physicians' Charges, and Services Where Allowed Charge Less Than Physicians' Charge

Medicare Part B carrier statistics	All <sup>a</sup>		West		South		North Central		Northeast	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Rate of change in mean physicians' charges, 1967-69 (percent)										
All services....	13.65	6.83	19.67	5.82	10.01	6.59	18.66	6.38	13.19	3.20
Medical care....	20.97	4.76	26.92	4.56	20.98	2.42	22.27	7.03	17.72	2.04
Assignment rate (percent)										
1968.....	56.24	11.96	59.93	9.85	54.99	12.99	51.27	7.75	56.04	12.38
1969.....	60.63	11.22	63.46	10.61	61.31	11.62	56.91	10.46	60.74	10.77
SMI reimbursement per enrollee (\$)										
1967.....	34.78	8.76	43.46	8.53	34.06	9.71	28.03	3.29	36.56	5.81
1968.....	71.10	16.93	78.97	15.44	70.45	20.82	61.83	4.82	74.63	9.22
1969.....	82.06	20.04	90.21	14.12	83.82	26.11	67.56	9.15	85.20	10.10
Reduction of physicians' charges, all services (pct.)										
1967.....	1.91	1.12	1.25	1.03	1.53	0.73	2.82	1.65	2.17	0.62
1968.....	3.41	1.96	1.88	1.11	3.37	2.23	4.61	2.05	3.41	1.07
1969.....	4.93	1.71	4.56	1.52	4.45	1.80	6.24	1.61	4.96	1.21
Allowed charge less than physicians' charge, all services (pct.)										
1967.....	3.49	2.82	2.56	2.49	2.40	1.55	6.47	4.45	3.60	1.09
1968.....	7.35	5.41	5.31	3.81	6.44	4.99	12.32	7.37	6.65	2.90
1969.....	12.65	6.16	16.98	7.42	10.25	4.48	18.04	6.42	10.91	4.11

continued-

Table 2. continued--

Note: Both mean and standard deviation are weighted.

$X_{it}$ : X-statistic of the i-th carrier at time, t.  
X could be the rate of change in physicians' charges, the assignment rate, etc.

$N_{it}$ : Number of all services of the i-th carrier, at time t

$\bar{X}_t$ : Weighted mean of  $X_{it}$

(S.D.)<sub>t</sub>: Weighted standard deviation of  $X_{it}$

where  $\sum_i N_{it} \cdot X_{it}$  ;  
 $\bar{X}_t = \frac{\sum_i N_{it} \cdot X_{it}}{\sum_i N_{it}}$  ;

$$(S.D.)_t = \left\{ \frac{\sum_i N_{it} (X_{it} - \bar{X}_t)^2}{\sum_i N_{it}} \right\}^{1/2}$$

For the rate of change in physicians' charges,  $N_{it}$  &  $\sum_i N_{it}$  are from 1969; in the case of SMI reimbursement per enrollee,  $N_{it}$  &  $\sum_i N_{it}$  are SMI enrollment rather than all services.

a/ The sample size is uniformly 35 carrier. These are listed in appendix B.

Source: Assignment rate, 1969 -- RS Health Insurance Statistics, U.S. Department of Health, Education and Welfare, Social Security Administration, Office of Research and Statistics, January 10, 1972.

Assignment rate, 1968 -- N. Dickoff of the Social Security Administration, Office of Research and Statistics.

SMI reimbursement -- Annual Statistical Supplement, Social Security Bulletin, June 1970, table 3.

All others -- Reasonable Charges Tabulations from 5 percent sample of medical insurance bills, Social Security Administration, Office of Research and Statistics, table 2A, as of December 1971.

A Bureau of Health Insurance, Social Security Administration letter of April 1971<sup>1/</sup> described the "full" reasonable charge criteria in the law. Excerpts from this letter follow.

A. Data Base and Effective Date of F.Y. 1972 Screens

Carriers should develop revised reasonable charge screens based on charge data for all of calendar year 1970 and implement them for all claims received on or after July 1, 1971.

B. Customary Charges

Customary charge calculations must be based on charge data derived from claims processed or from claims for services rendered during all of calendar year 1970. The 1970 data base used to establish customary charge limits should, to the maximum extent possible, include information available from other sources than Medicare claims, including the carrier's own programs, other insurance programs, and the Federal Employee Health Benefit Program.

In calculating the customary charge limit for a given service, each charge the physician or other person has made for the service should be arrayed in ascending order. The lowest actual charge which is high enough to include the median of the array of charge data should then be selected as the customary charge limit.

C. Prevailing Charges

The prevailing charge limits used by carriers to process claims received on or after July 1, 1971, must be calculated using the 75th percentile of the customary charges determined in accordance with Item B. above. In the calculations, each customary charge should be weighted by how often the physician or other person rendered the service (as reflected by the data the carrier used to derive the customary charges).

The proper procedure for establishing revised prevailing charge screens based on the 75th percentile is illustrated by the following example:

Procedure: Routine Follow-Up Office Visit

Step 1

Establish a frequency distribution listing each customary charge in ascending order together with the corresponding frequency of the services rendered:

<sup>1/</sup> Bureau of Health Insurance, Social Security Administration, Department of Health, Education and Welfare, Part B

Number of Services Rendered by Physicians Customary Charge With Customary Charges as Indicated		Cumulative Services
\$5	1402	1402
\$6	1115	2517
\$7	1680	4197
\$8	Total = 803 5000	5000

### Step 2

To determine the prevailing charge, select the lowest customary charge which is high enough to include the customary charges of the physicians who rendered 75 percent of the cumulative services during the year from which the customary charge data were derived.

In the above example, 75 percent of the total of 5,000 services equals 3,750 services. The prevailing charge is, therefore, \$7. (A total of 2,517 services were rendered by the physicians with \$5 and \$6 customary charges, and an additional 1,680 services were rendered by the physicians with \$7 customary charges. The 3,750th service was thus rendered by a physician with a \$7 customary charge.) The prevailing charge in the example actually covers almost 84 percent of the services. Generally, although the 75th percentile is selected as the prevailing limit, the fact that the same charges are made many times may mean that a larger percentile is also covered in full.

### G. Other Instructions

As we have indicated above, existing instructions not specifically changed by this letter remain in effect. These instructions take into account the need (a) to establish separate prevailing charge screens to recognize variations in charges due to specialty practice where the medical community has established such differentials, (b) to properly identify the localities used as the framework for establishing prevailing charge limits, (c) to use non-Medicare claims experience and generally to make sure that charges allowed as reasonable for Medicare beneficiaries do not exceed the charges physicians and other persons make to patients generally, and (d) to deal adequately with certain problems such

as fragmentation of charges and mark-ups charged by physicians for services actually rendered by independent laboratories.

The reasonable charge should be the lowest of three types of charges: the actual, the customary, the prevailing. Moreover (although this was not being implemented fully at the time of the letter quoted above), the reasonable charge should not be higher than the carrier was paying for the same procedure in its own business. Customary charges should not be updated more frequently than every 12 months; it is clear from the letter that in Fiscal 1972 there is implicitly an 18-month lag between reasonable charges and actual physician charges (the going price).

There were wide departures in 1967 from the customary-prevailing-reasonable (CPR) criteria that have just been described. These departures from CPR are summarized in table 3.

Table 3 actually presents a detailed scheme for analyzing and defining a method of determining the reasonable charge.<sup>1/</sup> There are five distinct aspects. Each aspect is broken down into a set of classifications that are by nature exhaustive and not overlapping; all Medicare Part B carriers have to fit in somewhere. As an important byproduct, for us, the entire contents of table 3 in this form can be translated into dummy or qualitative variables to be employed in regression equations. A great variety of methods of reimbursement

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<sup>1/</sup> CPR or the Medicare method can only be approximated in the terms of table 3:

1. No fee schedule
2. Recognizes specialty
3. Frequency of updating 6-12 months
4. All charges as sources of data used for prevailing charges
5. Other as definition of prevailing charges.

Obviously, "no fee schedule" does not therefore mean that customary charges using the median to measure their central tendencies were employed; or "frequency of updating 6-12 months," that updating occurred every 12 months; or "other as definition of prevailing charges," that the Part B carrier was employing the 75th percentile. But this set at least does not rule out the intent of Medicare.

Table 3. Distribution of Medicare "Reimbursement Methods"  
Among Carriers, 1967

	Where carrier is same as state	All carriers <sup>a/</sup>
Classification of fee schedule 1:		
No fee schedule.....	11	17
Fee schedule (R.V.S. or ceiling)...	26	42 <sup>b/</sup>
Total.....	37	59 <sup>b/</sup>
Classification of fee schedule 2:		
No fee schedule.....	11	17
Fee schedule (ceiling).....	8	16
Fee schedule (R.V.S.).....	18	26 <sup>b/</sup>
Total.....	37	59 <sup>b/</sup>
Recognizes specialty:		
No.....	22	36
Yes.....	15	24
Total.....	37	60
Frequency of updating:		
Above 1 year.....	8	12
6-12 months.....	11	17
Less than 6 months.....	6	12
Irregularly.....	12	18 <sup>b/</sup>
Total.....	37	59 <sup>b/</sup>
Sources of data used for prevailing charges:		
All charges (Medicare and non- Medicare).....	14	23
Medicare only.....	17	23
"Own business" only.....	6	11 <sup>c/</sup>
Total.....	37	57 <sup>c/</sup>
Definition of prevailing charges:		
Other prevailing charges.....	6	12
80-95 percentile of charges (cus- tomary, Medicare, non-Medicare, all).....	11	16
Fee schedule or R.V.S.....	20	32
Total.....	37	60
Type:		
Non Blue Shield.....	19	28
Blue Shield.....	18	32
Total.....	37	60

<sup>a/</sup> Only carriers from the 50 states and Washington, D.C. , are in-  
cluded. See appendix B for the listings.

<sup>b/</sup> Minnesota B/S not available.

<sup>c/</sup> Ohio B/S, Kansas B/S, and Maryland B/S not available.

Table 3. continued--

Source: Basic data with respect to carriers' adherence to the "CPR" method of determining allowed charges, 1967 survey, provided by members of Division of Provider and Medical Services Policy, Division of Contractor Operations of Bureau of Health Insurance, Social Security Administration, Department of Health, Education, and Welfare.

was being employed at the outset. The variety by no means encompassed the full range of methods, but it appeared sufficient to make it possible to explore the impact of the method of determining the reasonable charge on physicians' fee behavior.

#### A Nonlinear Price Adjustment Model

Our objectives in the present section are:

1. To investigate whether the method of determining the reasonable charge was a factor influencing the increases in Medicare physicians' fees in 1967-69
2. To investigate what role socioeconomic factors played in this regard
3. To investigate what role the acceptance of assignments played
4. To deduce some policies from the results.

There are as many as eight price-adjustment models to choose from before proceeding to test and estimate; i.e., linear and nonlinear types, general and Medicare variants, Two-Stage Least Squares (2SLS) and Ordinary Least Squares (OLS).<sup>1/</sup> We feel the best one is the nonlinear, Medicare variant, employing OLS multiple regression.

We assume here that the annual growth rate of Medicare fees is a function of (1) the current method of reimbursement, socioeconomic context, and the rate of acceptance of assignments, etc.,  $X_t$ ; and the previous year's fees,  $P_{t-1}$ , so:

$$\frac{P_t - P_{t-1}}{P_{t-1}} = \beta_0 + \beta_1 X_t + \beta_2 P_{t-1} \quad (1)$$

Equation 1 can be rewritten as

$$P_t = (1 + \beta_0 + \beta_1 X_t) P_{t-1} + \beta_2 (P_{t-1})^2 \quad (2)$$

<sup>1/</sup> See Methodological Note at the end of this section.

Equation 2 implies that the current year's price is a non-linear function of  $X_t$  and  $P_{t-1}$ .

From equation 2 we obtain

$$\partial P_t / \partial X_t = \beta_1 (P_{t-1}) \quad (3)$$

$$\partial (P_t / P_{t-1}) / \partial X_t = \beta_1 \quad (4)$$

$$\partial P_t / \partial P_{t-1} = (1 + \beta_0 + \beta_1 X_t) + 2\beta_2 (P_{t-1}) \quad (5)$$

The model implies:

1. The effects of method of reimbursement and socioeconomic variables on the current level of physicians' fees are a function of the previous year's level (equation 3 above).

2. Their effects on the annual rate of change of fees are a constant (equation 4 above).

3. The relation between this year's and last year's price is a function of last year's price and method of reimbursement and socioeconomic variables. The relation will be different for different carriers, i.e., as the method of determining reasonable charges and the socioeconomic context vary.

4. Assuming that  $X_t$  changes little or not at all and that  $\beta_2$  is negative, Medicare fees will grow at a decreasing rate; or, of two carriers with the same method of reimbursement and in the same socioeconomic context, the one with the higher previous year's price will grow more slowly. Consequently, any difference in the level of fees between them will in time be eliminated.

5. If Medicare fee differentials are not disappearing, it may be due to intercarrier variations in method of reimbursement and socioeconomic context. An important implication here is that uniformity of reasonable charge screens among carriers in the 1967-69 period would certainly have lessened some of the Medicare price level differences that existed among them in 1967.

To apply either of these two price-adjustment models to Medicare physicians' fees in 1967-69, we must pay more attention to the definition of  $P_{t-1}$ , the previous year's

price. In the general case, one might assume that a physician takes the average actual charge of the previous year for  $P_{t-1}$ . This is the usual assumption in price-adjustment models. For the special case of Medicare there is acceptance of assignments introducing a complicating element. For physicians who never accept assignments, the general case applies, but for physicians who always accept assignments,  $P_{t-1}$  cannot be the average actual charge; it must be the average allowed charge of the previous year. Since few physicians either never accept assignments or always accept them, the most reasonable approach in applying these models to Medicare fees is to define  $P_{t-1}$  as the weighted average of actual and allowed charges, the weights being 1 minus the net assignment rate (1-ASR) and the net assignment rate (ASR), respectively.<sup>1/</sup>

Letting  $P_{t-1}$  now stand for the previous year's average actual charge and defining  $AP_{t-1}$  as the previous year's average allowed charge, the previous year's price can be written as:

$$P_{t-1}(1-ASR)_{t-1} + AP_{t-1}(ASR)_{t-1}$$

With this modification arising out of the Medicare case, we distinguish two variants under both the linear and the nonlinear price-adjustment model:

1.  $P_{t-1}$  and  $(ASR)_{t-1}$  are separate independent variables
2. The previous year's price as defined for the case of Medicare, above.

In addition, since the net assignment rate could be considered an endogenous variable in a model of Medicare, purging the net assignment rate may be an essential step prior to proceeding with an estimation of the Medicare physicians' fee relationship. Both 2SLS and OLS methods were tested. The results are not very different in the two cases.

<sup>1/</sup> We are assuming that both actual and allowed physicians' charges are suitable substitutes for the relevant realized charge. A doctor who did not accept assignment may have charged \$10 but collected \$5, and one who accepted assignment may have been allowed \$9 but also collected \$5.

Our dependent variable is the total growth rate of average actual Medicare physicians' fees from 1967 to 1969.

The factors selected as independent variables fall into three groups:

1. Reasonable charges screen, or method of reimbursement factors
2. The previous year's price, the acceptance of assignments, and other statistics related to Medicare fees
3. Socioeconomic factors.

The method of reimbursement variables have already been described and discussed.

Among the second group, while average actual and allowed physicians' charges have been discussed, the others require more definition.

ASR, the net assignment rate, is "the number of assigned claims submitted with a Form SSA-1490, expressed as a proportion of all claims submitted with Form SSA-1490. The net rate excludes claims from hospital-based physicians who do not bill directly and claims from some prepaid group practice plans. In other words, claims submitted on Forms SSA-1554 or 1556, and considered 'assigned' by definition, are omitted from the computation."<sup>1/</sup>

S.D. is the standard deviation of average actual physicians' charges.

The selected socioeconomic variables and their definitions are

West: The West Census Region

<sup>1/</sup> The definition is given in U.S. Department of Health, Education, and Welfare, Social Security Administration, Office of Research and Statistics, Health Insurance Statistics, June 24, 1970, p. 3.

- Phys: The number of non-Federal general practice physicians per 100,000 of population, in 1968
- PMSI: The proportion of the population under 65 with surgical insurance, in 1968
- Age: Those 75 and over as a percentage of those 65 and over in 1970; an indicator of the age structure of the aged
- NBI: The Not-Bought-In proportion, defined as 1 minus those bought in for Medicare Part B by the state as a percentage of those enrolled in Medicare Part A in the state, in 1968

The results as to which factors influenced Medicare physicians' fee increases in 1967-69, and how, are derived from OLS multiple regression with a sample of 35 carrier-states; i.e., for all observations the carrier's jurisdiction was identical with the boundaries of a state. Why not employ all available carriers as observations? The answer is that when a carrier is more than or less than a state or overlaps with another state, much socioeconomic data that are otherwise readily available on a state basis are not available in these cases or are available only at the expense of extensive adjustments. (An example is the five carriers of New York.) On the other hand, it is a disadvantage not to be able to use them; a biased sample may be the result. This sample is employed as well in the assignment, SMI reimbursement, reduction in physicians' charges regressions. It is given in appendix B.

In the equations we are about to examine, the full set of method-of-reimbursement or reasonable-charge-screen variables is never employed. The reason is that the full set comprises 11 variables; and these 11 method-of-reimbursement variables, together with other Medicare-related and socioeconomic variables, quickly begin to exhaust the degrees of freedom -- testing and estimating become impossible. However, two features or aspects of the reasonable charge screen are combined in nearly all of the equations, and this is always done to test specific hypotheses as to the interaction of two features; e.g., the interaction of updating frequency (of customary charges) and the definition of prevailing charges.

Because of multicollinearity problems among the independent variables, a number of variables were consistently not significant statistically and are never shown as behavior influencing Medicare fees.

Table 4 presents the important regressions and results.

Methodological Note: The  
Linear Price-Adjustment  
Model (Koyck Formula-  
tion<sup>1/</sup>)

An increase in price is some fraction of the gap between the equilibrium or desired price and the price realized in the previous year, i.e.:

$$(P_t - P_{t-1}) = \lambda (P_t^* - P_{t-1}) \quad (1)$$

where

$$P_t^* = \beta_0 + \beta_1 (X_t) \quad (2)$$

$X_t$  is a shorthand expression for factors like the method of reimbursement variables, socioeconomic variables, the acceptance of assignments, etc.

$$0 \leq \lambda \leq 1$$

Equation 1 can be rewritten as

$$P_t = \lambda \beta_0 + \lambda \beta_1 X_t - \lambda P_{t-1} \quad (3)$$

Equation 3 states that the current price is a linear function of the current  $X$  and the previous year's price:

$$\partial P_t / \partial X_t = \lambda \beta_1 \quad (4)$$

$$\partial (P_t / P_{t-1}) / \partial X_t = \lambda \beta_1 / P_{t-1} \quad (5)$$

$$\partial P_t / \partial P_{t-1} = 1 - \lambda \quad (6)$$

This model implies all of the following:

1. All carriers reach their equilibrium price in the same amount of time,  $1/\lambda$ . This is so because the price-adjustment factor,  $\lambda$ , is a constant. As a corollary, differences among Part B carriers in socioeconomic context or with

<sup>1/</sup> L.M. Koyck, Distributed Lags and Investment Analysis, North-Holland Publishing Company, Amsterdam, 1954.

Table 4. Factors Influencing the Rate of Change of Medicare Physicians' Fees, 1967-69:  
Non-Linear Adjustment Model with Interactions Between Fees and Allowed Charges and  
the Assignment Rate

Factors	Equation							
	1	2	3	4	5	6	7	8
Constant.....	25.557	37.736	28.080	38.164	33.681	25.381	32.330	19.134
Fee schedule:								
Ceiling.....	-4.682 (2.532)	-5.472 (2.845)	-4.734 (2.602)					
R.V.S.....	-4.154 (1.993)	-2.821 (2.112)	-2.071 (2.003)					
Updating frequency:								
6-12 months.....				4.326 (2.883)				
Less than 6 months.....	6.742 (2.465)			7.364 (3.294)	6.326 (2.357)	4.059 (2.578)		
Irregularly.....				2.799 (2.932)				
Specialty recognized.....		-1.378 (1.918)						
Definition of prevailing: Fee schedule.....					-3.135 (1.663)			
Basis of prevailing. Medicare only.....							3.243 (2.169) 5.190 (2.897)	
"Own Business" only.....								-4.188 (2.041)
Blue Shield carrier.....			-3.455 (1.896)			-2.976 (1.913)		
S.D. of P69.....	1.522 (.238)	1.335 (.252)	1.233 (.241)	1.285 (.255)	1.458 (.237)	1.280 (.249)	1.199 (.244)	1.010 (.251)
P67 x (1-ASR68).....	-7.895 (1.102)	-7.761 (1.207)	-7.161 (1.179)	-7.840 (1.201)	-7.724 (1.104)	-6.969 (1.164)	-7.908 (1.203)	-5.296 (1.044)
AP67 x ASR68.....	-8.306 (1.169)	-8.401 (1.283)	-7.723 (1.240)	-7.651 (1.179)	-7.942 (1.151)	-7.193 (1.186)	-7.407 (1.209)	-5.418 (1.014)

continued--

Table 4. continued--

Factors	Equation							
	1	2	3	4	5	6	7	8
West.....	7.052 (1.762)	8.983 (2.089)	8.500 (1.973)	8.182 (2.051)	7.220 (1.760)	8.146 (1.965)	9.724 (2.149)	9.083 (2.133)
Phys.....	.213 (.061)	.204 (.069)	.177 (.064)	.202 (.070)	.175 (.058)	.146 (.060)	.166 (.064)	
PMSI.....		.160 (.098)	.207 (.094)	.114 (.102)		.156 (.100)	.188 (.097)	.263 (.100)
Age.....	-.536 (.373)	-.903 (.398)	-.696 (.385)	-.976 (.433)	-.629 (.373)	-.588 (.392)	-.928 (.401)	-.541 (.415)
NBI.....	.145 (.110)	.128 (.123)	.118 (.116)	.104 (.117)	.119 (.111)	.086 (.115)	.157 (.121)	.140 (.125)
Multiple correlation R....	.9150	.9031	.9139	.9104	.9091	.9105	.9022	.880

Note: Entries in parentheses denote standard errors.

A number following a letter symbol (i.e., P69) refers to a year.

respect to the method of determining reasonable charges do not affect the rate of price adjustment.

2. The effects of method of reimbursement and socioeconomic variables on  $P_t$  are a constant (equation 4); and their effects on the rate of price change decrease as price increases. In other words, the two types of variables have less and less of an impact on the growth rate as price increases (equation 5).

3. The adjustment locus is linear. Other things being the same (i.e., holding the values of all methods of reimbursement and socioeconomic variables constant), a dollar's increase in  $P_{t-1}$  always generates  $(1-\lambda)$  dollars increase in  $P_t$  (equation 6).

Our feeling is that these implications of the Koyck formulation are too unrealistic for it to be applied to a study of Medicare physicians' fee behavior.

#### Results With Respect to Method of Reim- bursement

Applying a fee schedule, whether of the ceiling or the relative-value scale (RVS) type, in place of the CPR screen had a powerful retarding effect on the growth rate of fees. Compare equations 1-3 in table 4. The ceiling variety is more of a brake than the RVS; other things being the same, the former reduces growth over 1967-69 by somewhere between 4.7 and 5.5 percent, and the latter by 2.1 to 4.2 percent. The coefficients of fee schedule ceiling are statistically significant very near or at the 95 percent confidence level. The coefficients of fee schedule RVS, while most meaningful, do not display the very high statistical significance.

In the absence of fee schedules, physicians will charge what they feel is a fair price, basing it on the services rendered and probably taking into account the patient's financial ability. Fee schedules, especially the RVS type, offer an external norm to guide a physician in placing a price on his services; most fee schedules are negotiated between organizations of physicians and insurers or organizations of consumers.

Carriers that employed fee schedules but updated customary charges frequently (less than 6 months) more than

nullified their braking effect (equation 1). Carriers that recognized specialty augmented the braking effect of fee schedules (equation 2). (However, this variable is never statistically significant. Perhaps it is necessary to know what fraction of all physicians' charges were from specialists if the role of this variable is to be brought out unambiguously.)

Where Blue Shield is the carrier, this slowing effect is reinforced (equation 3). Equations 3, 6, and 8 tell us that Medicare physicians' fees grow by 3.0 to 4.2 percent more slowly if the carrier is a Blue Shield. There might be the following reasons: (1) Blue Shields, being nonprofit physicians' associations, get more cooperation from physicians; (2) defining prevailing charges by the 95th percentile (as in our example) in their own business, they were in a better position to apply the tougher 75th percentile definition of prevailing charges to Medicare fees.

Equations 4, 5, and 6 introduce the frequency of updating variables. More and more frequent updating of customary charges leads to faster and faster growth of Medicare physicians' charges. Consider equation 4, where all three possible variables are used (in equations 1, 5, and 6 they are collapsed into one variable, updating less frequently than 6 months): The coefficient of "6-12 months" indicates that growth is 4.3 percent greater than in the case of "above 1 year"; the coefficient of "every few months" indicates that growth is 7.4 percent greater than "above 1 year"; this impact, in turn, is more sizable than "every 6-12 months." The first coefficient is meaningful although not highly significant; the second coefficient is consistently highly significant.

Equation 5 suggests that very frequent updating is in some measure offset by defining prevailing charges with a fee schedule. Equation 6 suggests that very frequent updating is partly offset by the carrier being a Blue Shield. In connection with equation 5, using the 80th-95th percentile of charges (or other bases) to define prevailing, being more generous than using a fee schedule, not surprisingly produces a faster rate of growth.

Equation 7, which introduces the sources of data for prevailing charges feature of reasonable charge screening, discloses that the Medicare-prescribed sources of both

Medicare and "own" business are best for controlling Medicare fees. Employing "own" business only is worst, as it ups the rate of growth by 5.2 percent; this may reflect the fact that there is less of an attempt to control "own" business charges encouraging fee escalation by physicians. Where prevailing came to be based only on Medicare charges, the outcome was worse than where it came to be based on both Medicare and non-Medicare business.

Results With Respect to  
Previous Year's Price,  
Acceptance of Assign-  
ments, and Other Medi-  
care Physicians' Fee  
Variables

S.D. of P69. The greater the dispersion of the price distribution, the greater the opportunity and incentive for physicians charging lower fees to catch up to physicians charging higher fees. This would cause prices to rise faster where the dispersion was greater. The coefficients of S.D. of P69 are consistently highly significant and range between 1.0 and 1.5 percent. CPR screening does not penalize for "overcharging." In the context of Medicare, overcharging is a false concept. The customary charge criterion and the update of customary charges are at once a compromise with and an incentive to overcharging. These tendencies are aggravated when carriers substitute the 80th or some higher percentile for Medicare's 75th.

$P67(1-ASR68) + AP67(ASR68)$ . An implication of the price-adjustment model we are testing is that price increases are an attempt to adjust actually realized prices to an equilibrium or desired price. Given that, one must expect that the previous year's price, or  $P67(1-ASR68) + AP67(ASR68)$ , will have a coefficient with a negative sign, controlling method of reimbursement and socioeconomic context. Other things being the same, the carrier with the higher previous year's price will experience the lower growth rate of Medicare fees.

The previous year's price was broken up into its two components,  $P67(1-ASR68)$  and  $AP67(ASR68)$ , and each was entered as a separate variable. The coefficients of the two are negative in sign, always highly significant, stable, and practically identical. This evidence tends to confirm the hypothesis incorporated in our price-adjustment model.

Although P67(1-ASR68) and AP67(ASR68) range between -5.4 and -8.4 percent, respectively, both are frequently near -8 percent. This means that, holding all other factors constant, of two carriers that in 1967 differed by \$1 in the average fee realized by physicians for Medicare services, the one with the higher average experienced a growth rate smaller by nearly 8 percent in the average from 1967 to 1969.

The Results with Respect  
to Socioeconomic Vari-  
ables

West. The regressions show that, other things being the same, the rate of change of Medicare physicians' fees is consistently higher in the West census region than in other regions. (See appendix B for the states that make up this group. It is important to keep in mind that California, a two-carrier state, is not among them.) The growth ranges from 7.1 to 9.7 percent more in the West region; the coefficients are highly significant.

We can only speculate as to the reasons. In a later section we present evidence that prepaid group practice plans (like Group Health Association, Washington, D.C.; and Kaiser Foundation Plan, Portland, Oregon) had a very rapid growth in premium and average cost per physician's visit in recent years. The population of the West may be denser in prepaid group practice, or HMO, enrollment. The higher rate of growth of Medicare physicians' fees in the West may result from the fact that in the West, Medicare Part B enrollees are more likely to be HMO enrollees as well, and this was possibly aggravated by a very rapid growth in HMO enrollment in recent years. Also, this variable could reflect something about the attitude of physicians in the region toward Medicare.

Phys. Here, clearly, an increase in the relative supply of physicians is associated with a faster rate of growth in Medicare fees. The magnitudes are slight, ranging from 0.15 to 0.21 percent, but they are consistent and statistically significantly different from zero. The reasons might be that supply creates its own demand; physicians reduce their working hours; physician density correlates with better information about markets and what they will bear.

PMSI. This variable combines two factors: (1) as a correlate of previous insurance purchases of current Medicare Part B enrollees, it may reflect the "habit-forming" nature

of previous insurance purchases (i.e., having previously purchased insurance, enrollees will continue it); and (2) competition between the two age groups, those under 65 and those 65 and over, for medical care. The expected positive sign of the coefficient was obtained. The variable is statistically significant in many equations.

Age. The 75 and over population might be expected to utilize physicians' services more. The demand-pull of an age structure of the aged skewed toward the 75 and over group might be expected to bring about a faster rate of growth in Medicare physicians' fees. This did not happen; instead, growth rates were consistently lower where the proportions of population 75 and over were higher. A possible explanation is that physicians tend to discriminate in pricing in the favor of the older aged. If a Part B enrollee 75 and over is more likely to have his medical bills covered by some form of welfare than one under 75, physicians must accept fee schedules as full payment.

NBI and other factors. NBI (percent not bought in by Medicare), income, sex, city, and similar variables also were tested. Usually, they were due to multicollinearity. A variable like NBI was retained, however, to improve the precision of other variables.

Test of the Marginal  
Effect From the In-  
clusion of the Method  
of Reimbursement and  
other Medicare-  
Related Factors

What is the total contribution of Medicare as a method of reimbursement in explaining the observed variation in Medicare physicians' fee behavior? Is this contribution significant?

The test can be illustrated with the aid of equation 1, table 5. Here, the multiple correlation coefficient is 0.658; it is a measure of the explanatory power of socioeconomic variables with respect to Medicare fee behavior variation. This set is identical with the one employed in most of the regressions of table 4, except for income (state income per capita). The addition of the method-of-reimbursement variables and other Medicare-related factors of equation

Table 5. The Influence of Socioeconomic Factors on the Rate of Change of Medicare Physicians' Fees, the Assignment Rate, SMI Reimbursement per Enrollee, Percent Reduction of Physicians' Fees, and the Increase in Medicare Physicians' Fees

Independent variables and R	Dependent variables								
	The rate of change of Medi-care physicians' fee, 1967-69 (eq. 1)	(eq. 2)	Assignment rate 1969 (eq. 3)	SMI "Money" reim-bursement per enrollee, 1969 (eq. 4)	(eq. 5)	SMI "Real" reim-bursement per enrollee, 1969 (eq. 6)	(eq. 7)	Percent reduction of phys. fees, 1969 (eq. 8)	The in-crease Medical phys. fees, 1967-69 (eq. 9)
Constant.....	19.604	18.592	104.683	155.461	156.683	14.358	14.773	-2.475	3.054
West.....	9.100 (3.245)	9.003 (3.184)		12.625 (5.496)	16.759 (5.197)	.148 (1.244)	1.301 (1.249)	.317 (.754)	.956 (.284)
City.....			-.250 (.128)						
White.....			.018 (.126)	.144 (.203)		-.051 (.046)		-.020 (.024)	
Phys.....	-.097 (.090)	-.117 (0.067)	.236 (.095)						-.005 (.008)
Phys-Spe.....									
PMSI.....	.223 (.157)	.209 (.149)	.251 (.150)	.855 (.392)	1.283 (.305)	-.022 (.089)	.049 (.073)	-0.030 (0.054)	.020 (.014)
Age.....	-1.021 (.489)	-1.012 (.481)	-.078 (.605)	-.374 (.267)	-2.232 (.852)	-.132 (.061)	-.235 (.205)	.037 (.036)	-.146 (.043)
NBI.....	.347 (.172)	.340 (.168)	-.460 (.171)	-2.648 (.984)	-.254 (.290)	-.083 (.223)	.045 (.070)		.026 (.015)
Income.....	-.00134 (.00390)		-.01103 (.00399)	-.260 (.291)		.059 (.066)		.00186 (.00087)	.0002 (.0003)
Multiple cor-relation coefficient, R.....	.6577	.6559	.7183	.7939	.7472	.5899	.3500	.5235	.7416

Note: Entries in parentheses denote standard errors.

1, table 4, raises the coefficient to 0.915. Is the difference between 0.915 and 0.658 a statistically significant difference? If it is, we must conclude that Medicare as method of reimbursement was a genuine, independent factor influencing Medicare physicians' increases over 1967-69.

The additional effect of Medicare is tested by the F ratio.

$H_n$ : Medicare factors do not contribute

$H_a$ : Medicare factors contribute

The F-ratio is defined:

$$F(N_1, N_2) = \frac{[SRS(N) - SRS(A)] / N_1}{SRS(A) / N_2}$$

Where:

SRS(N): Percent of the variation in the rate of change of Medicare physicians' fees, 1967-69, explained by the independent variables under  $H_n$

SRS(A): Similarly, under  $H_a$

$N_1, N_2$ : The appropriate degrees of freedom

$F(4, 24) = 14.91$  in this case. This is highly significant. We must reject the hypothesis  $H_n$ , that Medicare factors do not contribute to the change in physicians' fees.

All other F tests showed the same result.

#### Policy Implications and Conclusions

From table 4, the methods of reimbursement which are the "best" (yielding the lowest rate of growth) and "worst" (yielding the highest rate of growth) are:

<u>Characteristic</u>	<u>"Best"</u>	<u>"Worst"</u>
Fee schedule	Ceiling	No fee schedule
Updating frequency	Less frequently than every 12 months	More frequently than every 6 months

<u>Characteristic</u>	<u>"Best"</u>	<u>"Worst"</u>
Specialty	Recognized	Not recognized
Definition of prevailing	Fee schedule	Other than fee schedule
Basis of prevailing	Medicare and "own business"	"Own business only"

It will be recalled that CPR, the Medicare-prescribed reasonable charge screen, or the Medicare method of reimbursement, could be defined (with the qualifications mentioned) in terms of these five categories:

<u>Characteristic</u>	<u>Medicare Method of Reimbursement</u>
Fee schedule	No fee schedule
Updating frequency	Every 6 to 12 months
Specialty	Recognized
Definition of prevailing	Other than 80-95 percentiles of charges or fee schedule
Basis of prevailing	Medicare and "own business"

Medicare, it would seem with respect to two features is like the "worst" method: it does not employ fee schedules, whether ceiling or RVS; its employment of the 75th percentile of charges for definition of prevailing would be subsumed under "other than fee schedule." But it is like the "best" method in the three other respects. (Medicare's being characterized, under updating frequency, by the "every 6-12 months" class may be largely semantic; and the class "less frequently than every 12 months" may be more representative of the practice Medicare intended to prescribe.)

We previously concluded that Medicare qua method of reimbursement, or method of determining reasonable charges, contributed from 1 3/4 to 2 percent to the annual rate of growth of the BLS physicians' fee index. Now, from the section entitled "Factors Influencing Increases," we see that in 1966-69, CPR, or the specifically prescribed Medicare method of determining reasonable charges, either was not practiced by the carriers or competed with several other methods. We see too that as reasonable charge screening goes, CPR screening would be among the more effective for controlling physicians' fee behavior. So Medicare may have opened the way to complications and deviations when it prescribed reasonable charge

screening. However, it is perhaps more precise to conclude that it was not so much the attempt to practice CPR as the wide divergences from CPR that cost the additional 1 3/4 to 2 percent per annum.

It is sometimes said that "...payment at levels below the going price must either reimpose part of the burden of medical care on the beneficiary...or restrict the beneficiary to physicians willing to accept less than is usually charged for services...."<sup>1/</sup> But this is a misconception of the problem of controlling fees and costs. Reasonable charge screening, even an ideal version, could produce the escalation it is trying to prevent, by validating or even initiating increases in the levels of fees. When charges in excess of current customary, prevailing, and reasonable, though disallowed as a basis of reimbursement, enter into the subsequent CPR determination after an updating interval, market forces are given free play (with an imposed lag) and there is in addition an inducement to charge fees currently above those allowed. It is by no means evident that availability or quality of medical care would be restricted by methods of reimbursement without these features if these methods attempted to control fees on a broad front.

As opposed to the marked effect of fee schedules in dampening rates of fee increase, the wide variability of fees (S.D. of P69 in table 4) shows the "demonstration effect" of the higher fees in stimulating rates of increase in the average. Nor can we expect that costs will be held down by increasing the supply of physicians, at least within limits now foreseeable. The density of physician supply in the recent past has been associated with somewhat faster, rather than slower, rates of average price increase, perhaps because of more highly structured markets. Indeed, in a predominantly insured population, a marginally larger supply of physicians may activate an increased demand.

### Are Medicare Fees Converging?

It was hypothesized that the extension of medical insurance to a large and generally below-average income population would improve the demand for lower-priced services and

<sup>1/</sup> Bureau of Health Insurance, Medical Insurance Payments Under Conditions of Rising Fees, p. 1.

that prices in this segment of the "market" would rise faster than prices in higher priced segments. The analysis refutes the hypothesis: there is no evidence of convergence; on the contrary, prices may have diverged, at least between 1967 and 1969.

Analyses based on the Medicare "reasonable charges" series (physicians' bills of a 5 percent sample of beneficiaries) revealed that, while the average (mean) prices rose from 1967 to 1968 to 1969, the standard deviations, already very large in 1967, rose much faster, indicating a wider dispersion for both medical and surgical procedures (table 6). The coefficients of variation (standard deviation divided by the mean) are as follows:

	<u>1967</u>	<u>1968</u>	<u>1969</u>
Medical.....	1.44	2.27	2.22
Surgical.....	1.34	1.47	1.52

The analyses of variability among 35 carriers point to the same conclusion (table 7). The means of the coefficients of variation for the individual carriers, for both medical and surgical procedures, rose from 1967 to 1969. The coefficient of variation for medical services was larger, and nearly doubled from 1967 to 1969, indicating a substantial widening of the distribution.

Similarly, data of the California Medical Association on physicians' fees generally indicate that the standard deviations of the means, and the coefficients of variation for both San Francisco and Los Angeles, which hardly changed or which declined from 1962 to 1967, widened markedly between 1967 and 1971. These were, of course, the years of severe inflation, and the increased variability cannot be attributed directly to Medicare, but certainly there is no evidence of convergence.

Medicare Physicians' Fees and  
"What Others Pay"

Medicare and the BLS  
Physicians' Fee Index

The standard measure of change in physicians' fees nationally is the physicians' fee index of the Bureau of Labor

Table 6. Mean, Standard Deviation, and Coefficient of Variation of Medicare Physicians' Charges for Selected Types of Service in 1967, 1968, and 1969

(In U.S. dollars)

Statistics characterizing Medicare physicians' charges	1967	1968	1969
<u>Mean</u>			
All services.....	11.11	12.02	12.92
Medical care.....	7.10	8.06	8.71
Surgery.....	122.77	119.15	121.47
<u>Standard deviation</u>			
All services.....	35.76	39.45	41.95
Medical care.....	10.21	18.28	19.30
Surgery.....	169.00	174.79	182.18
<u>Coefficient of variation<sup>a/</sup></u>			
All services.....	3.22	3.28	3.25
Medical care.....	1.44	2.27	2.22
Surgery.....	1.38	1.47	1.50

a/ Standard deviation divided by mean.

Source: Reasonable Charges Tabulations from 5 percent sample of medical insurance bills, Social Security Administration, Office of Research and Statistics, tables IA and IY, as of December 1971.

Table 7. Mean and Standard Deviation of Medicare Part B Carriers' Coefficients of Variation of Physicians' Charges for Selected Types of Service, 1967-69

Statistics characterizing physicians' charges	1967	1968	1969
<u>Weighted mean of coefficients of variation</u>			
All services.....	3.16	3.26	3.29
Medical care.....	1.42	2.37	2.57
Surgery.....	1.31	1.38	1.45
<u>Weighted standard deviation of coefficients of variation</u>			
All services.....	0.17	0.17	0.18
Medical care.....	0.28	0.23	0.17
Surgery.....	0.09	0.12	0.12

Note: The sample size is uniformly 35.

Both the mean and the standard deviation are weighted.

$X_{it}$  = Mean physician charge of the i-th carrier at time t

$(S.D.)_{it}$  = Standard deviation of physician charges of the i-th carrier at time t

$(C.V.)_{it}$  = Coefficient of variation of physician charges of the i-th carrier at time t

where

$$(C.V.)_{it} = \frac{(S.D.)}{(\bar{X})_{it}}$$

$N_{it}$  = Number of all services of the i-th carrier, at time t

$(\bar{C.V.})_t$  = Weighted mean of  $(C.V.)_{it}$

where

$$(\bar{C.V.})_t = \frac{\sum_i N_{it} (C.V.)_{it}}{\sum_i N_{it}}$$

continued--

Table 7. continued--

(S.D.C.V.)<sub>t</sub> = Weighted standard deviation of (C.V.)<sub>it</sub>  
 where  

$$(S.D.C.V.)_t = \left\{ \frac{\sum_i N_{it} \cdot \left\{ (C.V.)_{it} - (\overline{C.V.})_t \right\}^2}{\sum_i N_{it}} \right\}^{1/2}$$

Source: The source of  $X_{it}$ ,  $(S.D.)_{it}$ , and  $N_{it}$  for the three types of service are Reasonable Charges Tabulations from 5 percent sample of medical insurance bills, Social Security Administration, Office of Research and Statistics, Tables 2A, 2X, and 2A, respectively, as of December 1971.

Statistics, a component of the Consumer Price Index. It is a Laspeyres index, weighted by base period value, with current prices based on "customary" charges for specified medical and surgical procedures as quoted by a sample of physicians. Medicare "reasonable charge" data, on the other hand, are based on actual (billed) and allowed (reimbursable) charges from the bills of a 5 percent sample of enrollees. Though it is limited to Medicare patients and the services they use, it represents prices actually charged, not quoted.

In the years 1967-70, a Laspeyres index of Medicare "actual" (i.e., billed) prices closely paralleled the BLS index, rising somewhat faster in 1968 and more slowly in 1969 and 1970 (table 8). The total increase for the 3 years was nearly the same for both indexes. The Medicare index of charges allowed as a basis of reimbursement rose only about two-thirds as fast and was noticeably restrained after 1968.

There was great variation in the rates of change in physicians' fees for different services (table 9). Average bills for medical care (about three-fourths of all services), consultations, and anesthesia rose more than 30 percent in 3 years, and average allowed charges more than 20 percent. Average bills for surgery and diagnostic procedures, on the other hand, rose less than 10 percent, and average allowed charges for these services rose scarcely at all.

#### Medicare and Blue Shield: The Common Procedures

Many Medicare SMI carriers are Blue Shield Plans, which serve Medicare enrollees side by side with their non-Medicare subscribers. Blue Shield Plans offer insurance coverage for ambulatory care which in many ways resembles Medicare, including a test of "usual, customary, and reasonable" prices as a basis of reimbursement. In spite of the difference in nomenclature, "usual and customary" is very nearly the equivalent of Medicare "customary and prevailing," and often the same screening procedure is used. The precise definitions, however, may differ; for example, a plan may use the 75th percentile of the distribution in the community as the upper limit of an allowed charge for Medicare while permitting reimbursement up to the 90th percentile for Blue Shield subscribers. Neither actual nor allowed charges need be identical in the same Blue Shield Plan.

Table 8. Comparison of BLS Physicians' Fee Index and Medicare Physicians' Fee Index, 1968-70  
(Index: 1967=100)

	Actual charges			Allowed charges		
	1968	1969	1970	1968	1969	1970
BLS physicians' fee index.	105.60	112.90	121.40			
Annual rate of change....	5.60	6.91	7.53			
Medicare physicians' fee index: <sup>a</sup>						
Laspeyres price index....	107.00	113.40	120.60	105.70	109.90	114.30
Annual rate of change...	7.00	5.98	6.35	5.70	3.97	4.00
Simple price index, base-year quantity weighted..	110.99	119.01	126.48	109.60	115.18	117.32
Annual rate of change...	10.99	7.23	6.28	9.60	5.09	1.86
Mean charge index.....	108.19	116.29	128.35	106.87	112.81	121.73
Annual rate of change...	8.19	7.49	10.37	6.87	5.56	7.91

a/ The Laspeyres formula, or simple price index base-year value-weighted, is

$$\frac{\sum_i \left( \frac{P_{it}}{P_{i0}} \right) \cdot (P_{i0} \cdot Q_{i0})}{\sum_i \left( \frac{P_{it}}{P_{i0}} \right) \cdot (\sum_j P_{i0} \cdot Q_{i0})}$$

The simple price index, base-year quantity weighted, is

$$\frac{\sum_i \left( \frac{P_{it}}{P_{i0}} \right) (Q_{i0})}{\sum_i \left( \frac{P_{it}}{P_{i0}} \right) (\sum_j Q_{i0})}$$

The mean charge index is

$$\frac{(\sum_i (PQ)_{it} / \sum_i Q_{it})}{(\sum_i (PQ)_{i0} / \sum_i Q_{i0})}$$

continued--

Table 8. continued--

Where

$P_i$  is the physicians' fee for the  $i$ -th service.  $P_i$  can represent either the actual or mean physician charge or the mean allowed charge.

$Q_i$  is the number of the  $i$ -th service.

$t$  is time period  $t$ .

$0$  is the base time period.

Source: Medicare Physicians' Fee Indexes derived from Reasonable Charges Tabulations from 5 percent sample of medical insurance bills, Social Security Administration, Office of Research and Statistics, table 1A, as of December 1971.

Table 9. Medicare Mean Charge Indexes by Type of Service, 1968-70  
(Index: 1967=100)

Type of service	Actual charges			Allowed charges		
	1968	1969	1970	1968	1969	1970
Medical care.....	113.50	122.70	131.10	112.10	118.60	123.80
Surgery.....	97.10	98.90	105.00	95.70	95.70	99.60
Consultation.....	116.80	134.00	140.10	114.90	128.10	133.80
Diagnostic:						
X-Ray.....	100.70	103.80	107.50	99.60	101.10	102.60
Laboratory.....	101.60	104.60	108.20	100.20	102.10	104.10
Radiation therapy.....	105.60	110.10	113.10	104.30	108.20	110.00
Anesthesia.....	109.20	120.60	133.11	107.10	117.00	123.30
Assistance at surgery.....	107.00	114.30	125.50	104.90	110.80	118.70
Other medical services.....	114.60	121.60	127.00	113.00	118.60	122.20

Source: Derived from Reasonable Charges Tabulations from 5 percent sample of medical insurance bills, Social Security Administration, Office of Research and Statistics, Table 1A, as of December 1971.

Medicare physicians' fees have tended to rise more slowly where carriers were Blue Shield Plans, and apparently more slowly for Blue Shield Medicare than for other Blue Shield subscribers (table 10). At any rate, this is the reading of a limited comparison in two Blue Shield Plans, Maryland and Michigan, which were able and willing to provide parallel data on Medicare and non-Medicare prices for a list of common procedures from 1969 to 1971. These data relate to a period after the 1968 SSA freeze, but data on Blue Shield "UCR" plans before 1969 are hard to come by, since most of these were not introduced until 1968 or later.

Indexes constructed for 24 procedures common to Medicare and Blue Shield in Maryland indicate that, between 1969 and 1971, both actual and allowed prices rose more slowly for Medicare patients than for Blue Shield subscribers. The differences were substantial, especially for allowed charges, which rose nearly 10 percent for Blue Shield but less than 3 percent for Medicare.

The Michigan data, covering 19 procedures quarterly, show somewhat more rapid increases than in Maryland for actual charges, and not much difference between Blue Shield and Medicare. Medicare allowed charges increase less than half as much as Medicare actual charges, while Blue Shield allowed charges lag slightly behind Blue Shield actual. The Michigan data, however, shed some light on the ways the method of reimbursement may affect prices. In contrast to the rather smooth rise of actual charges, allowed charges exhibit abrupt quarterly changes, including both sharp increases and sharp declines, which may represent the effects of administrative determinations. The impression is that the Michigan screening has a pronounced affect on allowed charges.

#### Physicians' Fees Under Alternative Methods of Reimbursement

The customary/prevaling standard for determining allowable charges is an adaptation of conventional fee-for-service pricing of physicians' services. Though this is by far the dominant mode of pricing, other modes are in use in a variety of arrangements for delivering and pricing physicians' services.

Some insurance plans use "relative value scales" in which prices for all services are expressed as multiples of

Table 10. Comparison of Physicians' Fee Indexes for  
Selected Common Procedures under Two Screens:  
Blue Shield's "UCR" and Medicare's "CPR"

Carrier	Indexes <sup>a/</sup> of actual charges		Indexes <sup>a/</sup> of allowed charges	
	Medicare	Blue Shield	Medicare	Blue Shield
Maryland Blue Shield:				
1969.....	100.00	100.00	100.00	100.00
1970.....	104.90	104.90	100.80	106.20
1971.....	106.80	110.40	102.60	109.60
Number of pro- cedures.....	24	24	24	24
Michigan Blue Shield:				
1969:				
1st quarter...	100.00	100.00	100.00	100.00
2nd quarter...	102.30	102.70	104.40	105.40
3rd quarter...	102.40	104.30	104.40	108.10
4th quarter...	103.40	106.50	104.80	109.50
1970:				
1st quarter...	105.10	108.10	104.50	108.30
2nd quarter...	106.20	109.60	100.60	102.30
3rd quarter...	108.20	109.00	101.00	99.10
4th quarter...	107.40	109.00	99.80	98.60
1971:				
1st quarter...	110.20	110.40	102.40	108.70
2nd quarter...	112.00	111.80	106.10	110.10
3rd quarter...	112.60	113.90	105.60	111.80
4th quarter...	113.80	115.20	107.30	112.20
1972:				
1st quarter...	114.00	115.30	106.50	112.50
Number of pro- cedures.....	19	19	19	19

Note: Common procedures refer to procedures of approximately equal importance to persons over and under 65, and of nearly equivalent performance difficulty. The lists of common procedures of Maryland and Michigan are given in appendix B. The selection methodology employed by NABSP is also to be found there.  
UCR means usual, customary, reasonable; CPR means

Table 10. continued --

customary, prevailing, reasonable. These terms, which are described in detail elsewhere, are the Blue Shield and Medicare bases, respectively, for determining allowed physicians' charges. Data for comparisons were available only for Maryland and Michigan Blue Shield.

a/ The Laspeyres formula was employed.

Source: Research Department of the National Blue Shield Plans (NABSP).

the price of some basic service, reflecting differences in duration and complexity of services. Price changes are accomplished by changes in the base price, thus retaining relative values unchanged. The San Joaquin County, California, plan is a prepaid plan in which physicians accept the RVS price as full payment. The administration of the plan includes control of prices and review of utilization rates for purposes of medical management. The index of RVS prices of the San Joaquin plan rose by 23.6 percent between 1966 and 1971 (table 11). This was very much less than the increase in the BLS physicians' fee index in the same period, and less than the general index of physicians' fees compiled by the California Medical Association. This is consistent with the analytical finding of the analyses of intercarrier differences in the rate of increase in Medicare charges, which revealed a significant dampening effect on price increases where RVS was the basis of pricing.

Measuring "prices of physicians' services" in HMO's for comparison with fee-for-service prices presents conceptual and definitional difficulties. There is no financial transaction between doctor and patient; only between patient and HMO and between doctor and HMO. The "price" the patient pays is mainly his dues; the doctor is salaried. Perhaps the nearest to a physicians' fee index is an index of per patient or per visit cost of doctors' services to the group.

Using cost per service, we constructed an index for the Group Health Association of Washington, D.C., 1966-71, by weighting cost changes per visit for the whole range of ambulatory services provided (table 11). The resulting index shows an annual rate of increase of more than 8 percent, distinctly higher than the BLS or other observed rates. We take this to be a reflection of the rapidly rising levels of physicians' incomes, which have forced group practices to raise salaries rapidly to compete for qualified staff. Such groups have depended heavily on being able to attract young doctors just entering practice, to whom this employment may be a transition between internship and private practice. The opportunity costs of young, well-trained doctors have been rising rapidly, partly because of higher fees for service, and partly because of improved productivity (technology). Since group practice is already relatively efficient compared to individual practice, the increase in salaries has resulted in an increase in costs. That premiums have not risen to the same extent is due to factors of medical management (table 12).

Table 11. Comparison of Physicians' Fee or Cost per Visit  
Indexes Under Alternative Methods of Reimbursement,  
1970-71

(Index: 1966=100)

	1970	1971
<u>Group practice</u>		
Group Health Association, Inc. <sup>a/</sup> Washington, D.C.....	n.a.	148.20
<u>Individual practice</u>		
California County Medical Societies Foundation for Medi- cal Care of San Joaquin County, California <sup>b/</sup> .....	115.92	123.56
California Physicians' Fee Index..	122.29	128.39
BLS Physicians' Fee Index.....	129.98	138.97

n.a. = not available.

<sup>a/</sup> GHA's physicians are salaried.

<sup>b/</sup> San Joaquin County's physicians are reimbursed on the basis of a fee-schedule relative value scale.

Source: GHA -- a Laspeyres cost per unit index calculated from George S. Perrott and Goldie Krantz, Notes from Special Studies of Operating Statistics, Group Health Association, Inc., Washington, D.C., May 1972.  
San Joaquin County -- a Laspeyres physicians' fee index calculated from data provided by the plan to the Federal Employees Health Benefits Program.  
California -- Socio-economic Report, California Medical Association.  
BLS -- Bureau of Labor Statistics, Handbook of Labor Statistics, 1971, and BLS, Monthly Labor Review, October 1972.

Table 12. Comparison of Insurance Premiums  
(In percent)

	1964	1970
<u>Kaiser Foundation Health Plan of Portland, Oregon (with hospital)</u>		
Dues per member.....	100	154.06
Dues per family.....	100	156.49
<u>Washington, D.C. - G.H.A.</u>		
Single plan:		
Standard with hospital.....	100	154.64
Standard without hospital.....	100	153.64
Premium with hospital.....	100	154.37
Premium without hospital.....	100	154.10
Family plan:		
Standard with hospital.....	100	154.96
Standard without hospital.....	100	154.34
Premium with hospital.....	100	154.10
Premium without hospital.....	100	154.37

Source: Kaiser Foundation, 1964 -- Ernest W. Saward, M.D., and others, "Documentation of Twenty Years of Operation and Growth of a Prepaid Group Practice Plan," in Proceedings, Part II, Group Health Association of America, October 1967 (GHA, Washington, D.C.), pp. 113, 115. Kaiser Foundation, 1970 -- Communication with Ernest W. Saward, M.D. GHA -- Communication with GHA.

It was hypothesized that the existence of prepaid practice groups on a scale large enough to be a significant factor in the market for medical services would have a dampening effect on fee-for-service prices. The only opportunity for a test of this hypothesis was in California, where the Kaiser Foundation prepaid group plans have enrolled very large numbers (in the San Francisco area, on the order of 20 percent of the population; in the Los Angeles area, a much smaller fraction). There is no reason, a priori, to expect great differences in levels and rates of change between the two places, and such evidence as we have might suggest that fees might rise rather faster in San Francisco: it has a higher per capita income, higher density of physicians, and more hospital beds in relation to population. In fact, however, the California Medical Association (CMA) data show consistently lower prices, especially for surgical procedures, less variability, and slower price increases in San Francisco (tables 13 and 14). This is not inconsistent with the hypothesis, but neither is it conclusive evidence that large-scale HMO's will affect fee-for-service prices through competition.

#### Factors Influencing the Acceptance of Assignments

By agreement between the physician and the patient, the physician's fee may be "assigned"; that is, the claim may be submitted by the physician to the carrier for direct reimbursement of 80 percent of the allowable charge, with the remaining 20 percent billed by the physician to the patient. As a condition of assignment, the physician agrees to accept the allowable charge as payment in full, thereby foregoing the option, available to him on nonassigned claims, of charging the patient in excess of the allowable charge. Thus, in return for the certainty of (relatively prompt) payment, the physician agrees to limit his fee to the allowable charge.

As of April 1968, patients were permitted (by law) to claim for reimbursement on the evidence of the doctor's bill, without having to present evidence that it had been paid, as previously required. This obviously made assignment more attractive to the doctor by relieving him not only of the uncertainty but also of the expenses of collection. The assignment rates (assigned bills as a percent of all bills) promptly rose by 4 or 5 percentage points.

For the 35 statewide carriers used in this study, the mean net assignment rate (excluding bills from hospital-based

Table 13. Physicians' Fees Behavior in Relatively High and Relatively Low HMO Enrollment Areas: San Francisco and Los Angeles, 1962, 1967, and 1971

Physicians' fees	Deflated <sup>a/</sup>		Not deflated	
	San Francisco	Los Angeles	San Francisco	Los Angeles
Index:				
1962.....	100.00	100.00	100.00	100.00
1967.....	108.71	115.81	120.02	127.04
1967.....	100.00	100.00	100.00	100.00
1971.....	101.21	108.90	121.64	129.09
Mean price (\$):				
1962.....	47.71	51.13	47.71	51.13
1967.....	55.73	54.28	61.53	59.54
1971.....	57.51	68.16	76.30	88.61
Standard deviation (\$):				
1962.....	8.86	11.71	8.86	11.71
1967.....	8.24	11.17	9.10	12.25
1971.....	12.97	15.56	17.21	20.23
Coefficient of variation:				
1962.....	0.22	0.27	0.22	0.27
1967.....	0.21	0.23	0.21	0.23
1971.....	0.27	0.29	0.27	0.29

Note: In symbols, the mean price of time,  $t = \sum (PQ)_{jt} / \sum Q_{jt}$   
The standard deviation of time,  $t = \sum (\sigma Q)_{jt}^2 / \sum Q_{jt}^2$   
The coefficient of variation of time,  $j t = \sum (C.V. \cdot Q)_{jt} / \sum Q_{jt}$   
where  
 $P_{ijt}$ : Price,  $i$ , of procedure,  $j$ , at time,  $t$   
 $Q_{ijt}$ : Frequency of price,  $i$ , of procedure,  $j$ , at time,  $t$   
 $Q_{jt}$ : The total frequency of procedure,  $j$ , at time,  $t$   
where  $Q_{jt} = \sum_i Q_{ijt}$

Table 13. continued--

$P_{jt}$ : The average price of procedure,  $j$ , at time,  $t$   
 where  $P_{jt} = \sum_i (PQ)_{ijt} / Q_{jt}$

$\sigma_{jt}$ : Standard deviation of  $P_{ijt}$   
 where  $\sigma_{jt} = \left\{ \frac{\sum_i (P_{ijt} - P_{jt})^2 Q_{ijt}}{Q_{jt}} \right\}^{1/2}$

$(C.V.)_{jt}$ : Coefficient of variation of  $P_{ijt}$

where  $(C.V.)_{jt} = \frac{(\sigma)}{(\bar{P})_{jt}}$

Laspeyres index formula with 1962 as the base year was employed throughout.

a/ The deflators employed are the respective consumer price indexes (CPI's) of the two cities:

Year	San Francisco	Los Angeles
1962	100.00	100.00
1967	110.40	109.70
1971	132.68	130.00

From Bureau of Labor Statistics, U.S. Department of Labor, Monthly Labor Review.

Source: California Medical Association, fees index data provided to this study on punch cards.  
 The data were for June 1962, 1967, and 1971 for 14 individual practice procedures where they were available for all 3 years. The procedures include six surgical, five medical, two pathology, and one radiology. The statistics consisted of levels of charge and frequencies. San Francisco includes the six Bay Area counties plus Santa Clara County; Los Angeles is Los Angeles County.

Table 14. Rate of Change from 1962 to 1971 in the Price of  
Selected Procedures<sup>a/</sup> in Relatively High and Relatively  
Low HMO Enrollment Areas: San Francisco and Los  
Angeles

(In percent)

	Deflated <sup>b/</sup>		Not deflated	
	San Francisco	Los Angeles	San Francisco	Los Angeles
T.&A. - under 18 years.....	14.47	31.35	51.89	70.76
Appendectomy.....	2.24	28.39	35.68	66.91
Hemorrhoidectomy - in- ternal and external.....	5.27	20.32	39.70	56.42
Herniotomy - inguinal, unilateral.....	17.30	29.83	55.66	68.79
Total hysterectomy.....	10.13	28.40	46.14	66.92
O.B. delivery, ante- and postpartum care.....	11.11	29.89	47.14	68.87
Chest - single PA (x-ray, diagnostic).....	-4.83	-1.33	26.23	28.31
Complete blood count.....	-11.36	-6.76	17.66	21.17
Complete routine urin- alysis (chemical and microscopic).....	-2.66	3.02	29.28	33.96
Follow-up office visit, routine.....	10.00	13.57	45.87	47.56
Follow-up home visit, routine.....	32.25	31.41	75.50	77.37
Follow-up hospital visit, routine.....	39.94	49.44	85.93	94.31
Consultation - complete examination.....	6.62	13.71	41.49	47.82
Electrocardiogram with interpretation and report.	-7.16	-0.47	23.21	29.42

continued --

Table 14. continued --

a/ The rate of change in the average price of a procedure between 1962 and 1971, i.e.,  $P_j 1971 \div P_j 1962$

b/ The deflators are as in table 13.

Source: California Medical Association fees index data.

physicians reimbursed directly in all cases) was 56.2 percent in 1968 and 60.6 percent in 1969 (table 2). (These two statistics are a little lower and exhibit a larger increase than the national rates of about 59 and 61.5 percent in 1968 and 1969, respectively.)

Assignment rates vary considerably from carrier to carrier, from physician to physician, from case to case. In general, bills for more expensive services are more likely to be assigned than bills for less expensive ones. Beyond this, we may hypothesize that the more nearly the allowed charge approximates the physician's going rate for a given service, the more likely it is that the physician will accept assignment and forego the option to charge the patient a higher fee. We might hypothesize, further, that the higher the patient's income, the less likely it is that the physician will forego that option.

The analysis of variability among the 35 statewide carriers in the net assignment rate reveals a tendency for these elements of the method of reimbursement which are associated with slowly rising levels of fees to be associated also with lower net assignment rates (table 15). Such factors as the use of fee schedules, the use of lower percentile cutoffs for the definition of prevailing charges, and less frequent updating of customary charges have been found to yield slower rates of price increase. For this reason they appear to make doctors less likely to accept assignment. The relationships, however, are not conclusive: though the signs and values of the coefficients point to this result, the coefficients are not statistically significant. On the other hand, assignment rates were significantly higher (5.6 percent on the average) among carriers that, other things being the same, recognized medical specialties in determining allowable charges.

The assignment rate was depressed among carriers that used either Medicare experience only or "own business" experience only as the basis for prevailing charges, in comparison with carriers who used a mix of all insured business (equations 2 and 3, table 5). We can only conjecture that the mix yields higher fees (i.e., nearer the going rate) than either component alone. The analysis showed that assignment rates were higher where the level of allowable charges was higher; these coefficients, on the whole, are significant.

In general, however, methods of reimbursement were less important than socioeconomic variables in explaining

Table 15. Factors Influencing the Assignment Rate, 1969

Factor	Equation			
	1	2	3	4
Constant.....	59.210	106.898	79.509	100.508
Specialty recognized.	5.635 (3.081)			
Basis of prevailing: Medicare only.....		-5.885 (2.921)	-4.137 (3.679)	
"Own business" only.		-8.494 (3.940)	-8.296 (4.316)	
Blue Shield carrier..			-3.160 (3.118)	
AP69.....	2.398 (1.225)	1.722 (.870)	1.984 (1.244)	1.188 (.913)
City.....	-.321 (.124)	-.268 (.109)	-.261 (.126)	-.288 (.109)
White.....	-.072 (.128)		-.072 (.133)	
Phys.....	.185 (.098)		-.121 (.109)	.201 (.092)
PMSI.....	.314 (.143)	.221 (.143)	.259 (.149)	.249 (.143)
Age.....	.995 (.771)		.830 (.809)	
NBI.....	-.444 (.161)	-.548 (.163)	-.558 (.169)	-.487 (.163)
Income.....	-.016 (.004)	-.00656 (.00348)	-.011 (.004)	-.012 (.004)
Multiple correlation, R.....	.7820	.7509	.7895	.7370

Note: Entries in parentheses denote standard errors.  
A number following a letter symbol (i.e., P69) refers to a year.

carrier-to-carrier variability in the assignment rate. Assignment rates were lower where the proportion of the population 65 and over living in cities of over 100,000 was higher, and lower where per capita incomes were higher. If state per capita income could be a proxy for the incomes of SMI enrollees, it would appear that where patients are more likely to have complementary health insurance or otherwise are better able to pay, assignment rates are lower. Similarly, a low not-bought-in proportion (NBI), which ensures the physician 100 percent collection of the allowable charge and moreover, we believe, makes acceptance of assignment mandatory, is also associated with high assignment rates.

From the variables included in the analyses, it appears that higher assignment rates could be brought about by higher and more rapidly rising prices, but this approach has obvious dangers. It should be noted, however, that these variables altogether account for only about 60 percent of the carrier-to-carrier variability. The remainder is embedded in a variety of institutional/political factors beyond the reach of our analysis -- such as local attitudes of physicians or of physicians' organizations.

#### Factors Influencing Disallowance of Charges

The screening of doctors' bills to determine the charge to be allowed for purposes of reimbursement results, in an appreciable fraction of cases, in an "allowed" charge that is less than the actual amount of the bill. This reduction is not a reduction in the doctor's bill: except in cases of assignment, the patient is liable to the doctor for the full amount. What is reduced is the basis of reimbursement; the beneficiary cannot claim more than 80 percent of the allowed charge.

Such reductions have become increasingly frequent (table 2). In 1967, the allowed charge was less than the actual charge in 3.5 percent of the cases; by 1969 the figure had risen to 12.6 percent. By 1969 the disallowed portion averaged nearly 5 percent of total physicians' charges. Both figures were conspicuously higher in the North Central Region, and were lower than average in the South.

There is variability among carriers in the average percent reduction of physicians' charges, all services, which

is not surprising considering the differences among carriers in the method and standards of screening (table 16). There is a tendency for the percent reduction to be lower where ceiling fee schedules are in use, since fee schedules are accepted by both physicians and carriers, and higher where customary charges are updated every 6 to 12 months. But, in general, the variables describing differences in the method of reimbursement explained relatively little of the carrier-to-carrier variability in disallowances; and all of the variables together in this analysis explained less than half.

The influence of certain socioeconomic variables seems more pronounced. There was a tendency for disallowances as a percentage of billed charges to be lower where the proportion of whites in the 65 and over population was higher, where a higher proportion was also covered by Medicaid, and where the relative supply of specialists -- the number of non-Federal medical specialty physicians per 100,000 of population -- was smaller.

Disallowances are the result of differences between actual charges, on the one hand, and reasonable charges as defined for purposes of reimbursement by Medicare carriers, on the other. These differences become larger and more frequent if actual charges accelerate their rise from the levels that currently are the basis of CPR determinations; if actual charges are diverging, so that more of them fall above the percentile limit of prevailing charges; or if the basis of determining customary and prevailing charges deliberately introduces longer lags that lower the rate of increase of reasonable charges relative to that of actual charges. During the period covered by this analysis, actual prices were rising rapidly and diverging, and Social Security was introducing procedures to dampen the increases in allowed Medicare charges. The rising incidence (and extent) of disallowances from 1967 to 1969 reflects this.

#### Factors Influencing Benefits Paid Per Enrollee

SMI benefits per enrollee more than doubled from 1967 to 1968, as the Medicare Part B program became more widely recognized and used, and increased again by more than 15 percent in 1969. The increases were evident and of the same general magnitude in all regions (table 2).

Table 16. Factors Influencing the Percent Reduction of  
Physicians' Charges, 1969

Factor	Equation			
	1	2	3	4
Constant.....	-5.278	-10.212	-6.157	-1.419
Fee schedule:				
Ceiling.....	-1.714 (.908)	- 1.059 (.946)		
Updating frequency:				
6-12 months.....	2.067 (.746)		2.098 (.795)	3.162 (.956)
Less than 6 months..	1.324 (.905)		1.417 (.921)	2.600 (1.084)
Irregularly.....				.498 (.885)
Specialty recognized.		1.542 (.687)		
Definition of prevailing: 80-95 percentile....			1.647 (1.167)	
Fee schedule.....			.693 (1.049)	
Blue Shield carrier..				1.890 (.674)
AP69.....		.045 (.266)		
West.....	.478 (.674)			.668 (.646)
White.....	-.066 (.030)	-.026 (.033)	-.048 (.029)	-.054 (.024)
Phys-Spe.....	.111 (.043)	.062 (.058)	.073 (.042)	.087 (.039)
Age.....	.161 (.133)	.186 (.170)	.186 (.149)	
NBI.....	.072 (.037)	.083 (.039)	.049 (.039)	.067 (.035)
Multiple Correlation, R.....	.6457	.5965	.6261	.6927

Table 16 . continued --

---

Note: Entries in parentheses denote standard errors.  
A number following a letter symbol (i.e., AP69) refers  
to a year.

The variability among carriers in 1969 was on the order of 25 percent. Monetary benefit per enrollee tended to be greater when customary charges were updated at intervals of 6 to 12 months, where the carrier was a Blue Shield plan, in the West, and where the relative supply of specialists was greater (table 17). Benefits were distinctly less where enrollees 75 years of age and over predominated.

When benefits take into account differences among carriers in the prices of physicians' services, i.e., when benefits are in terms of limits of physician services per enrollee, the same variables are significant but more of the variability is unaccounted for.

As a policy consideration, differences in benefits per enrollee are particularly important as they bear on the distributive effects of the operation of SMI. Though premiums are uniform, benefits vary systematically to the disadvantage of enrollees in lower-income and higher-age groups. In table 17 we see that benefits per enrollee, both in money and in real terms, are significantly lower where people 75 and over are a higher percentage of the aged. These perverse distributive effects could be overcome by variable premiums, variable coinsurance, or Medicaid coverage.

Table 17. Factors Influencing SMI Reimbursement per Enrollee in 1969, "Money" and "Real" Reimbursement

Factor	"Money" <sup>a/</sup> (equation 1)	"Real" <sup>b/</sup> (equation 2)
Constant.....	168.001	20.654
Updating frequency:		
6-12 months.....	21.681 (7.777)	1.427 (.663)
Less than 6 months.....	9.912 (8.274)	.769 (.700)
Irregularly.....	9.436 (6.904)	.593 (.587)
Blue Shield carrier.....	10.704 (5.529)	.687 (.458)
S.D. of P69.....		.059 (.088)
AP69.....	-.965 (1.988)	-.818 (.394)
West.....	19.711 (5.462)	1.755 (.540)
White.....		.009 (.020)
Phys-Spe.....	1.522 (.437)	.133 (.040)
Age.....	-3.434 (1.085)	-.247 (.111)
NBI.....		-.028 (.024)
Multiple correlation, R...	.8163	.6931

Note: Entries in parentheses denote standard errors.

A number following a letter symbol refers to a year.

a/ "Money" = SMI reimbursement per enrollee.

b/ "Real" = 
$$\frac{\text{"Money"}}{P69(1-ASR69) + AP69 \cdot ASR69}$$



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ROBERT R. NATHAN ASSOCIATES, INC.  
WASHINGTON, D.C.

APRIL 1973

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Submitted to the  
Bureau of Health Insurance  
Social Security Administration  
Department of Health, Education and Welfare  
Baltimore, Maryland

Contract Number SSA 72-2763

by  
Orest Koropeccky and Lien-fu Huang

Robert R. Nathan Associates, Inc.  
Washington, D.C.

April 1973

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### III. THE EFFECT OF OUT-OF-POCKET COST UNDER MEDICARE PART B ON AN ENROLLEE'S DEMAND FOR PHYSICIANS' SERVICES

#### A. The Model and Related Questions

##### 1. The Model

Most health insurance can be reduced to values of a deductible and a coinsurance rate with reference to services covered; much is explicitly structured in this way. Before the deductible is met, the insurance does not operate; the coinsurance rate is 100 percent; the charge for the service and what the insured person pays are the same. After the deductible is met, the coinsurance rate operates; its value is less than 100 percent; and the charge for the service and what the insured pays are not the same -- the latter is less than the former by the charge times the rate of insurance coverage.

The primary objective of this part of the research is to estimate the aged individual's demand function for ambulatory physicians' services, a multivariate function, using a cross-section of some 4,000 aged persons in 1969, and to test whether coinsurance and deductible are among the statistically significant variables determining demand.

The coinsurance rates of individuals in our sample on the whole were not "administered" to them, but were the result of choices made by the individuals themselves. This element of consumer choice or "adverse selection" unfortunately biases the estimating if it is ordinary one-stage regression, e.g., least squares or maximum likelihood. For, as one source has described it, "our company experience indicates an uncanny ability on the part of laymen to choose, when offered an option in coverages, that one which later events will prove

most beneficial to them."<sup>1/</sup> In effect, given adverse selection, we must admit a simultaneous equation system and necessarily resort to simultaneous equation methods, to try to purge co-insurance of adverse selection if our estimates are to be unbiased. Given the way we measure the deductible, adverse selection should not be a factor with regard to it. The deductible is "administered"; therefore, no attempt is made to purge it.

Consider the system

$$V_1 = V_1(K_1, K_2, S) \quad (1)$$

$$V_2 = V_2(K_1, K_2, S) \quad (2)$$

$$K_1 = K_1(V_1, S') \quad (3)$$

$$K_2 = K_2(V_2, S') \quad (4)$$

where  $V_1$ ,  $V_2$ ,  $K_1$ , and  $K_2$  are all endogenous;  $S$  and  $S'$  are two sets of exogenous variables;  $V_1$  and  $V_2$  are ambulatory and in-hospital physicians' services, respectively; and  $K_1$  and  $K_2$  are ambulatory and in-hospital coinsurance rates, respectively. Furthermore, let it be noted that we are assuming that the above system cannot be partitioned into two independent subsystems. In other words, the subsystem made up of equations (1) and (3) is incomplete in the sense that  $K_2$  depends on  $K_1$  and  $V_1$ . To illustrate, starting with equation (1),  $K_1$  and  $K_2$  "cause"  $V_1$ ;  $V_1$  "causes"  $K_1$ ;  $K_1$  "causes"  $V_2$ ;  $V_2$  "causes"  $K_2$ . An analogous causal ring is assumed to operate in the subsystem of equations (2) and (4). Therefore, to estimate  $V_1$  in this system we first regress  $K_1$  and  $K_2$  on the set of variables  $S'$ . Then, replacing  $K_1$  and  $K_2$  in  $V_1$  by their estimated values in terms of  $S'$ ,  $K_1$  and  $K_2$ , we regress  $V_1$  on  $K_1$ ,  $K_2$  and  $S'$ , and similarly for  $V_2$ . The set of variables  $S'$  should include at least all the variables, other than  $V_2$ ,  $K_1$ , and  $K_2$ , which are explanatory variables of  $K_1$  and  $K_2$ . The set of variables  $S'$  should include all exogenous variables of the system, although it is not strictly necessary.<sup>2/</sup>

<sup>1/</sup> Charles Hall, Jr., "Deductibles in Health Insurance: An Evaluation," The Journal of Risk and Insurance, June 1966, p. 256.

<sup>2/</sup> Although we inquired extensively into whether this system, when the estimating techniques (III.C.2 and 3 and III.A.2) and the functional forms (III.A.3) are considered, is identifiable, we are not presenting an exposition of these questions

$$V_1 = V_1(\hat{K}_1, \hat{K}_2, S)$$

$$V_2 = V_2(\hat{K}_1, \hat{K}_2, S)$$

## 2. Nonuse and Hybrid; Maximum Likelihood Estimates, Expected Values, and Expected Value Elasticities

The linear, multiple, least-squares regression model breaks down when the dependent variable has a lower or upper limit and takes on this limiting value, for a substantial number of the sample observations. At a lower (upper) limit, negative (positive) deviations from the expected limiting value are impossible, contrary to the assumptions of the normal model. An estimation procedure for such cases, which is a hybrid of Probit and least-squares regression analysis, has been suggested by Tobin.<sup>1/</sup> Table 18 and chart 3 show an example of Hybrid.

In the second stage of the two-stage regression, we employ Hybrid. The  $V_1$  and  $V_2$  regressions are the case of the dependent variable having a lower limit.  $V_1$ , for instance, whether it be ambulatory physicians' visits or charges, office visits, or clinic visits, frequently takes on the value zero. For ambulatory physicians' visits, nonuse is 25 percent of the sample; for office visits, 32 percent; and for clinic visits, 81 percent.

In the first stage, our dependent variables in fact have an upper and a lower limit and take on these limiting values a substantial number of times. A brand new statistical technique became necessary at this point. Building on Probit and Hybrid, a theoretical solution was found; and the new technique was employed in the study, i.e., in the  $K_1$  and  $K_2$  regressions. Two-Limit Probit, as this new method was named, receives a fuller treatment in III.C.2 and 3.

here. However, we reached the conclusions that (1) a two-stage approach was possible, and (2) the Two-Limit Probit estimate of the expected value of coinsurance was the best estimator, given the alternatives.

<sup>1/</sup> J. Tobin, "Estimation of Relations for Limited Dependent Variables," Econometrica, vol. 26, 1958, pp. 24-36.

Table 18. An Example of Hybrid: Calculation of Expected Value ;

X	Maximum likeli- hood values $\frac{Y^*a}{Y^*a}$	$\frac{Y^*-L}{\sigma}$	$P\left(\frac{Y^*-L}{\sigma}\right)$	$Y^*, P$	$Z\left(\frac{Y^*-L}{\sigma}\right)$	$Z \cdot \sigma$	Expected value estimates $E(Y Y^*)C/$
-0.5...	0	0	.50000	0	.39894	.20067	.20067
-0.35..	.3	.596	.72575	.21773	.33322	.16761	.38534
-0.25..	.5	.994	.83891	.41946	.24439	.12293	.54239
-0.15..	.7	1.392	.91774	.64242	.15183	.07637	.71879
0.0....	1.0	1.988	.97670	.97670	.05508	.02771	1.00441
0.15...	1.3	2.584	.99506	1.29358	.01431	.00720	1.30078

a/  $Y^* = 1.0 + 2.0X$ ; the estimates of the parameters of  $Y^*$  are maximum likelihood estimates.

b/  $L = 0.0$ ;  $\sigma = 0.503$ .

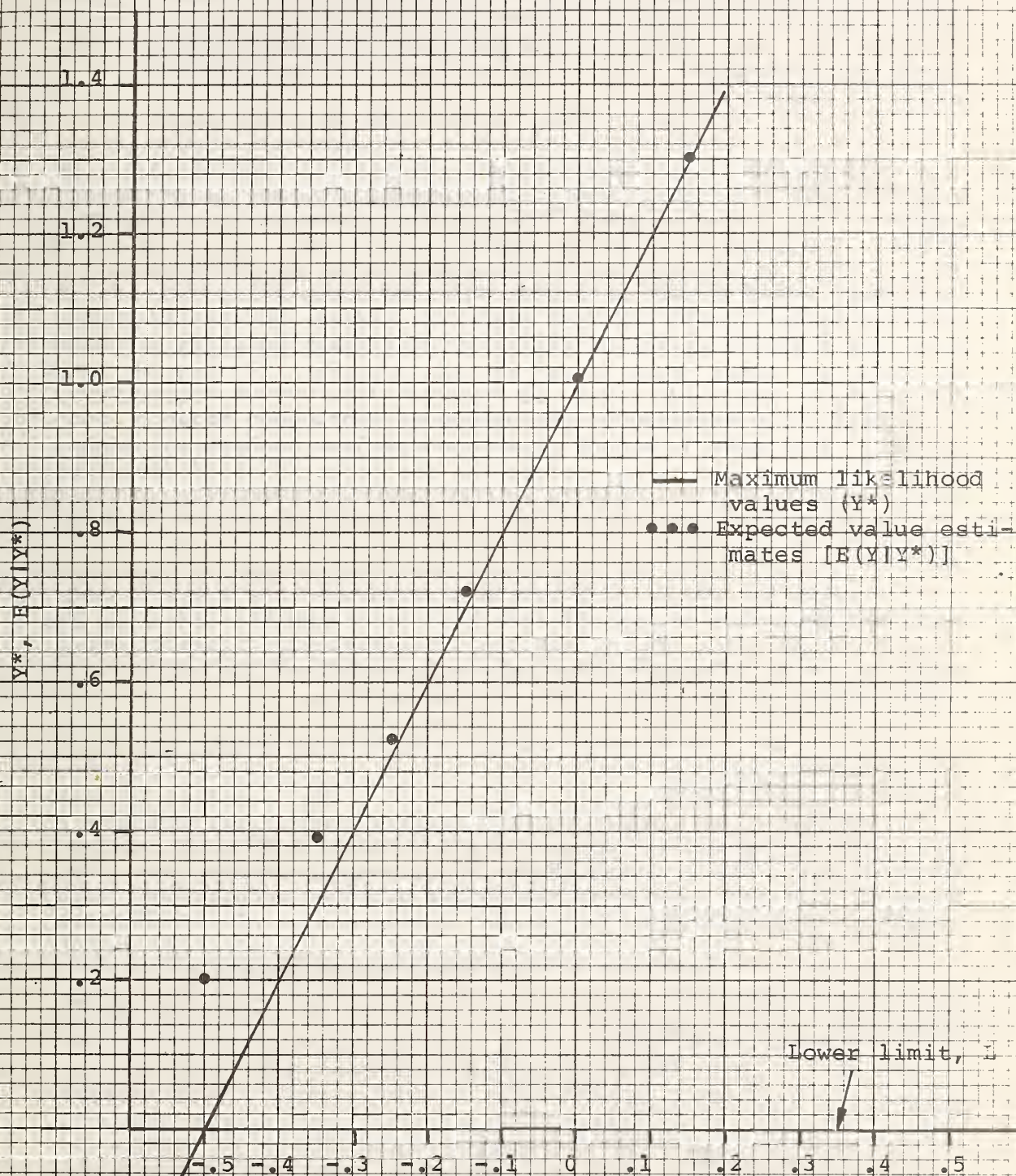
c/ Hybrid expected values are calculated from

$$E(Y|Y^*) = LQ\left(\frac{Y^*-L}{\sigma}\right) + Y^*P\left(\frac{Y^*-L}{\sigma}\right) + \sigma Z\left(\frac{Y^*-L}{\sigma}\right)$$

where  $P(x)$  is the value of the cumulative unit-normal distribution function at  $x$ ;

$Q(x) = 1-P(x)$ ; and  $Z(x)$  is the value of the unit-normal probability of density function at  $x$ .

Chart 3. An Example of Hybrid



In chart 3, the broken line composed of the horizontal axis to -0.5 and the solid line after that (i.e., the relationship between the limited dependent variable and the independent variable and the limit) estimates the locus of medians of the dependent variable. This is also what the first column of table 18 represents.

This locus is inappropriate, however, for dealing with some of the chief questions investigated in Part II of this report. For example, elasticities, as conventionally understood, would be misleading computed from the Hybrid relationship. What is wanted is the expected value of the dependent variable, given a set of values for the independent variables and the lower limit. (These expected values are calculated from the formula given in table 18; the dots in chart 3 trace an expected value locus based on our example. It may be noted that, while the solid line, or maximum likelihood regression, is linear, the expected value locus as estimated here is non-linear. The same locus is given by the last column of table 18.) The expected value estimates the mean value of the dependent variable, given values of independent variables and limit. Our elasticities are derived from the expected value locus.<sup>1/</sup>

Expected value loci are presented in this report, not only for examples of Hybrid and Two-Limit Probit, but also for actual regressions employing these two methods; however, no expected value elasticities were computed from the expected value locus of Two-Limit Probit regressions.

### 3. Functional Forms

Whether the demand for physicians' services is being estimated by Hybrid or coinsurance is being estimated by Two-Limit Probit, the hypothesized relationships between the two types of limited dependent variables and the independent variables are postulated to be linear combinations of qualitative

<sup>1/</sup> The elasticity with respect to X,  $e_X$ , was computed by us according to the formula

$$e_X = \left\{ \frac{\partial Y^*}{\partial X} \cdot P\left(\frac{Y^*-L}{\sigma}\right) \right\} \frac{X}{E(Y|Y^*)}$$

When X = K (coinsurance),

$$e_K = - \left\{ \frac{\partial Y^*}{\partial (1-K)} \cdot P\left(\frac{Y^*-L}{\sigma}\right) \right\} \frac{K}{E(Y|Y^*)}$$

The other variables are defined in table 18.

or dummy variables (which we will sometimes refer to as statuses), quantitative variables, their squares, and interaction terms, both between quantitative variables and statuses and among quantitative variables.

Squared terms introduce flexibility into testing and estimating. For example, in estimating elasticity, squared terms allow the slope (that is, the first derivative with respect to a variable), as well as the ratio of independent variable to dependent variable, to change.

Interaction terms allow the derivative with respect to a variable to depend on other independent variables; this too introduces flexibility into testing and estimating.

We do not employ nor have we experimented with all possible interaction terms, since this can quickly get out of hand.

Our main concern is to relate utilization of physicians services to the coinsurance rate and the deductible. Mostly, the interaction terms are combinations of the two coverages (1.0 minus coinsurance rate) and the deductible with one another and with prices and income.

The interactions among the two coverages and the deductible account for three terms:  $C_1C_2$ ,  $C_1D$ ,  $C_2D$ . Each coverage interacts with the appropriate regional price(s) and family income:  $C_1RP4$ ,  $C_1Y$ ;  $C_2RP8$ ,  $C_2Y$ . (When the dependent variables are office and clinic visits,  $RP4$  is replaced by two prices:  $RP6$ , the average regional price of office visits, and  $RP7$ , the average regional price of clinic visits. Consequently,  $C_1RP4$  is replaced by  $C_1RP6$  and  $C_1RP7$ .) The deductible interacts with all regional prices and family income:  $DRP4$ ,  $DRP8$ ,  $DY$ . (Again, in the cases of office and clinic visits,  $DRP4$  is replaced by  $DRP6$  and  $DRP7$ .) Welfare status-family income interactions give two more terms:  $WSY$  and  $WSY^2$ . Apart from these, there are four terms involving income known status, on the one hand, and welfare status, ambulatory care coverage, in-hospital care coverage, and deductible, on the other:  $YKSW$ ,  $YKSC_1$ ,  $YKSC_2$ ,  $YKSD$ . (The income known status interactions permit less constrained estimation.) This means that we employ 16 to 18 interaction terms in the utilization of physicians' services regressions. Three interaction terms are employed in the complementary insurance regressions,

involving only welfare status, family income, and income known status: WSY, WSY<sup>2</sup>, WSYKS.

#### 4. The Interpretation of Cross-Section Results

The results of Part II derive from a sample of aged individuals in 1969.<sup>1/</sup> As their interest lies mainly in an "over-time" interpretation, it is important to delineate in what sense cross-section results can be given an "over-time" interpretation.

Moreover, the same questions investigated here have been investigated by others by means of before-and-after comparison (time series). To be able to relate and compare the two kinds of testing and estimation also makes clarification desirable.

Changes in the coinsurance rate, deductible, prices, and income take place in a changing environment. For example, national health insurance may one day be extended to those under 65; physicians may one day be reimbursed on a different basis than fee-for-service; and medical technology is constantly changing.

Cross-section results, on the other hand, represent the adaptation of aged individuals with different coinsurance rates, deductibles, etc., to a stationary environment, i.e., a given national health policy, method of reimbursement of physicians, state of medical technology. In the rare circumstances that these broader influences on demand did not change, cross-section effects would indeed be verified for an individual in time. Still, this provides a clue: one may interpret cross-section estimates as indicating the behavior of a typical individual if his coinsurance or deductible, etc., changed in a relatively stable broad environment of health care.

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<sup>1/</sup> The 1969 cross-section was the most recent one available for testing and estimating.

B. The Model Tested: The Demand for Covered  
Ambulatory Physicians' Services of an  
Enrollee

1. The Variables and the  
Sample Sizes

Ambulatory medical care (that is, medical care outside hospitals and long-term institutions) deserves special scrutiny. One reason for such scrutiny is the rapid rate at which hospital costs are rising. Another is the interest in health maintenance organizations for the way they substitute ambulatory care for hospitalization. Finally, because it leaves much to individual decision, ambulatory care allows the greatest scope for a study of the determinants of the demand for health care.

We estimate two relationships and compare them: in the one, the limited dependent variable is physicians' visits; in the other, physicians' charges. Both are necessarily zero or positive. (See supplementary tables 1 and 2.)

The sample size is 3,954 persons in the case of visits and 3,900 in the case of charges. The smaller sample size for charges is brought about by the exclusion of 52 individuals who utilized, in other words, who had a positive number of visits, but whose charges for those visits were zero. Given that dollars here measure units of physicians' services, these individuals represent an error in the measurement of the dependent variable. Otherwise, to be in the sample, an individual had to be an SMI enrollee and to have been interviewed 12 times in the survey year; also, the necessary prices and the assignment rate had to be available.

Both visits and charges were related to 14 statuses,<sup>1/</sup> comprising 30 dummy variables,<sup>2/</sup> 7 quantitative variables,<sup>3/</sup> 6 of which were also squared,<sup>4/</sup> and 16 interaction terms.<sup>5/</sup>

<sup>1/</sup> Hospital stay; census region and size of place; living arrangement; household size; race; marital status; education; health limitations; health evaluation; work status; age; sex; welfare status; income known status.

<sup>2/</sup> The 30 variables can be studied in any of supplementary

## 2. Results

### a. Qualitative Variables

The basis of these variables is for the most part the semiannual Demographic Record; we used the second interview, the one later in the year, of the Current Medicare Survey.

The variables on the following page are statistically significant, at 80 percent or higher confidence level. (Variables that served as residual classes, i.e., "unknown," "all other," etc., are not shown even if significant.) For visits, the change in the estimated maximum likelihood value, or index, is expressed in number of visits; for charges, in dollars.

With very few exceptions the two sets of variables, the sign of each variable, and the two rankings are the same. The ratio of the change in charges to the change in visits, for a variable, is somewhat lower for the positive charges than for the negative. For instance, a hospital stay means 5.7 more visits and \$56 more in charges, a ratio of about \$10 per visit; on the other hand, being Negro means 2.0 fewer visits and \$24 less in charges, a ratio of \$12 per visit.

tables 1, 2, 4, or 5.

3/ Coverage for ambulatory care,  $C_1$ ; coverage for in-hospital care,  $C_2$ ; the average price in a region of an ambulatory physicians' visit,  $RP_4$ ; the average price in a region of an in-hospital physicians' visit,  $RP_8$ ; family income,  $Y$ ; the net assignment rate in a region,  $ASR$ ; deductible,  $D$ .  $C_1$  and  $C_2$  are  $1-K_1$  and  $1-K_2$ , respectively.

$C_1$  and  $RP_4$ ,  $C_2$  and  $RP_8$  appear separately in our regressions. Would it be more appropriate to combine them (i.e.,  $C_1RP_4$  and  $C_2RP_8$ ) and use only the products as variables? We think not. Coverage is always the coverage of a sample person. Price, however, is the price prevailing in a carrier's region. All sample persons residing in the same region have the same price. In the present circumstances, the coinsurance or coverage of an individual for a type of medical care is relatively certain; his gross price for that care is less so. This is our justification for not using only the products as variables. We do introduce interactions between  $C_1$  and  $RP_4$  and  $C_2$  and  $RP_8$ , but for the reasons detailed these are not strictly differences between gross and net prices.

4/  $(C_1)^2$ ,  $(C_2)^2$ ,  $(RP_4)^2$ ,  $(RP_8)^2$ ,  $Y^2$ ,  $D^2$ .

5/ These are enumerated in III.A.3.

Variable	Effect on maximum likelihood
	Number of visits
Living arrangement:	
Not in institution.....	11.5
Hospital stay during the year:	
Yes.....	5.7
Health evaluation:	
Worse than that of others.....	4.8
Same as that of others.....	2.0
Sex:	
Female.....	0.9
Census region and size of place:	
North Central rural.....	-1.6
Race:	
Negro.....	-2.0
Census region and size of place:	
Northeast rural.....	-2.4
West rural.....	-2.9
	Amount of charges (\$)
Living arrangement:	
Not in institution.....	127
Hospital stay during the year:	
Yes.....	56
Health evaluation:	
Worse than that of others.....	50
Same as that of others.....	21
Sex:	
Female.....	12
Health limitations:	
Other limitations.....	-13
Census region and size of place:	
North Central urban.....	-14
North Central rural.....	-23
Race:	
Negro.....	-24
Census region and size of place:	
Northwest rural.....	-33
West rural.....	-36

It is self-evident how the variables that define living arrangements, hospital stay, and health evaluation affect utilization of ambulatory physicians' services the way they

do. Clearly someone living a good part of the year in a health-care institution will not have many home or office visits; people in poor health or who are hospitalized will have more. The effects of sex, census region and size of place, and race are not self-evident but are hardly surprising. It is already generally known that, other things being the same, women utilize more than men; the rural population utilizes less than the urban, particularly the Northeast urban; and Negroes utilize less than whites. These findings merely confirm these tendencies among the aged.

### b. Quantitative Variables

In the case of visits, the terms, taken as a group, in the ambulatory coverage, the deductible, and the average regional price of in-hospital physicians' visits are significant; the net assignment rate, which appears alone, is also significant. In the case of charges, only the terms in the ambulatory coverage and the assignment rate are significant. For visits, then,  $C_1$ ,  $D$ ,  $RP8$ ,  $ASR$ ; for charges,  $C_1$ ,  $ASR$ .<sup>1/</sup>

### c. Interactions

Interaction terms imply that the effect of one of the interacting variables on the number of visits or the amount of charges is different for different values of the other interacting variable. For example, the effect of degree of insurance coverage on physicians' visits is different at different income levels. Few of the interaction terms are statistically significant; this is true for visits as well as for charges. In the visits regression, the coefficients of three interaction terms are significant: ambulatory coverage and income, in-hospital coverage and the regional price of in-hospital physicians' services, and in-hospital coverage and income. In the case of charges, only the two coverage-income interactions are significant.

<sup>1/</sup> Hypotheses about the relationship of visits and charges to one or more of the independent variables may be tested by the likelihood-ratio method. (J. Tobin, "Limited Dependent Variables," p. 28.) If the natural logarithm,  $\ln$ , of the likelihood function is evaluated once without and once with the additional  $X$ 's, the difference between the former and latter is the logarithm of the likelihood ratio,  $\lambda$ . The statistic  $-2 \ln \lambda$  is for large samples approximately distributed by chi-square with  $m$  degrees of freedom,  $m$  standing for the number of variables added.

With regard to insurance coverage for ambulatory visits in relation to income,  $C_1Y$ , for both visits and charges the sign of the interaction term is negative. This interaction points to the following: while at most levels of income the individuals increase demand for ambulatory physicians' services in response to an increase in coverage, the increase in demand is less (absolutely) at higher than at lower incomes. Obversely, the impact of loss in coverage affects poor individuals more severely than rich.

The coefficients of these two terms are:

$$-0.7492 \times 10^{-2} \text{ (visits)}$$

$$-0.8122 \times 10^{-1} \text{ (charges)}$$

In terms of changes in the estimated maximum likelihood index: \$100 more income implies that the increase in the number of visits is less by 0.75 visits; \$100 more income implies the increase in charges is less by about \$8 of expenditure.

With regard to insurance coverage for hospital visits in relation to income,  $C_2Y$ , both signs are positive. While at most levels of income, the individual decreases demand for ambulatory physicians' services in response to an increase in coverage for in-hospital medical services, the decrease is less (absolutely) at higher than at lower incomes. In other words, the poor react more than the rich. The approximate magnitudes implied are: \$100 more income implies the reduction is less by 0.41 visits; \$100 more income implies the reduction is less by about \$4.50 of expenditures.

For insurance coverage for hospital visits in relation to the regional price of in-hospital physicians' visits,  $C_2RP8$ , the coefficient is  $0.1365 \times 10^1$ . While at most levels of RP8, regional price of in-hospital physicians' services, the individual decreases demand for ambulatory services in response to an increase in in-hospital care coverage, the decrease is less (absolutely) at the higher than at the lower RP8. A regional price higher by \$1 implies the reduction is less by 1.37 visits.

While these are the only statistically significant interaction terms, there is apparently a pattern among some

other interactions that suggests that the deductible may have an indirect effect on physicians' services demanded through its relation to the price level of medical care. A given deductible will be easier to meet at a higher level of prices than at a lower, that is, rising prices reduce the deductible's deterrent effect by lowering its real cost.

With this in mind, what signs might be expected for the coefficients of  $C_1RP4$  and  $DRP4$  in the two regressions? The first partial derivatives of visits and charges with respect to  $C_1$  and  $D$  are, respectively, positive and negative. (There are ranges of  $C_1$  and  $D$  where the first derivatives do not "behave"; however, for our purposes, they may fairly be ignored.) If there is an indirect effect of the deductible, given an increase in coverage, the increase in services demanded by an individual ought to be greater at the higher regional price of ambulatory physicians' services. An increase in price ought to inhibit utilization; on the other hand, at higher and higher price levels, a given deductible is met by fewer and fewer visits, and the inhibiting effects of rising prices are lessened. And, given an increase in deductible, the decrease in demand ought to be less at the higher price. (Incidentally, if the last is true, the sign of the coefficient of  $DRP4$  should be the opposite of the sign of  $D^2$ .) A comparison of what might be expected under the hypothesis with what resulted in the regressions follows:

Independent variable	Expected sign of coefficient	Observed sign when dependent variable is:	
		Visits	Charges
$C_1RP4$ .....	+	+	+
$DRP4$ .....	+	-	+
$D^2$ .....	-	-	-

In summary, there may be something to the hypothesis that the deductible deters (or fails to deter) not only directly but also indirectly through its relation to the price of care.

3. How Deductible and Coinsurance Affect the Demand for Ambulatory Physicians' Care of the Aged Person

Preliminary figures hint broadly at how deductible and coinsurance affect utilization. The utilization rate of ambulatory medical care (considering only individuals with no welfare) of those with some complementary insurance is 87 percent; that of those with no complementary insurance is 62 percent. (The utilization rate of those with some welfare is 84 percent.) These rates are for a year; the corresponding figures for 3 months are 65 percent, 44 percent and 67 percent. Similarly, 38 percent of those with no complementary insurance for ambulatory medical care meet the statutory deductible of \$50, whereas 60 percent of those with some complementary insurance meet it. (For 3 months, the corresponding figures are 13 percent and 25 percent. The percentage of those with full complementary insurance is 56 percent for 12 months and 36 percent for 3 months; the percentage of those with partial complementary insurance is 61 percent for 12 months and 23 percent for 3 months. Those with some welfare are included in these percentages; some welfare, it will be seen, automatically confers some complementary insurance.)

To be able to analyze relationships between visits or charges and deductible and coinsurance we had to decide what kind of person to standardize on. In the case of dummy variables we chose the most probable person in the sample by selecting the cell with the highest frequency in each status. In the case of quantitative variables, we employed sample medians. This approach is adopted in all of our equations; standard persons differ only insofar as the sets of independent variables differ.

Characteristics of the standard sample person are:

Hospital stay.....	None
Census region and size of place.....	Northeast urban
Living arrangement.....	Not in institution
Household size.....	Two or more persons
Race.....	White
Marital status.....	Nonmarried
Education.....	Less than 9 years
Health limitations.....	No limitations
Health evaluation.....	Better than that of others
Work status.....	No work

Age..... 75 and over  
 Sex..... Female  
 Welfare status..... No welfare  
 Income known status..... Income known  
  
 $C_1 = 0.85$  (supp. table 7 and supp. charts 1 and 2)  
 $C_2 = 0.87$  (supp. table 7 and supp. charts 3 and 4)  
 $RP_4 = \$8.00$  (supp. table 11)  
 $RP_6 = \$8.00$  (supp. table 12)  
 $RP_7 = \$11.50$  (supp. table 13)  
 $RP_8 = \$18.50$  (supp. table 14)  
 $Y = \$3,000$  (supp. tables 9 and 10, supp. charts 7, 8, 9, and 10)  
 $D = \$50.00$  (supp. table 8, supp. charts 5 and 6)  
 $ASR = 58.0$  (supp. table 15)

The effect of deductible and coinsurance on the individual's demand for ambulatory physicians' services emerges clearly from tables 19 to 21 and charts 4 to 6.<sup>1/</sup>

<sup>1/</sup> A few words about these tables and charts are in order.

a. A coinsurance rate of 0.25 and deductibles of \$60 and \$85 are, of course, outside the ranges of coinsurance and deductible observed in our sample. But \$60 is the present statutory deductible, and the other two values have recently been put forth by the Nixon administration to amend Medicare. We employed all of them, in part to learn what our equations would predict, and in part to understand better our model. The reader, of course, should keep in mind that all values are in 1969 prices.

b. A coinsurance rate of 0.18 is more representative of those with nothing but Medicare than is the coinsurance rate of 0.20. Since all coinsurance rates are expected value estimates, there are rates only "close" to 20 percent; there are no rates of 20 percent. (To complete the picture, the deductible has to be \$50.)

From supplementary table 7, only 5.2 percent of the sample have an ambulatory coinsurance rate between 0.18 and 0.20, but 45.0 percent have a  $K_1$  between 0.16 and 0.20. Interestingly, those with no complementary insurance with respect to ambulatory medical care were 48.6 percent of the sample. The latter figure, as will be seen, is the product of self-selection; the figure of 45.0 percent, however, is not.

c. Visits and charges, given the functional forms we employ, attain maxima and minima with respect to the various independent variables, e.g., income, coinsurance, deductible, etc. For example, in table 21, visits, for \$3,000 income, reach a maximum of 7.88 when the coinsurance declines to 0.08;

Table 19. Expected Value of Covered Physicians' Ambulatory Charges and the Ambulatory Coinsurance Elasticity of Demand for Selected Coinsurance Rates and Deductibles

Deductible (\$)	1 - ambulatory coinsurance rate; ambulatory coinsurance rate											
	.75; .25		.82; .18		.85; .15		.88; .12		.90; .10		.92; .08	
	Ex- pected value	Elas- ticity	Ex- pected value	Elas- ticity	Ex- pected value	Elas- ticity	Ex- pected value	Elas- ticity	Ex- pected value	Elas- ticity	Ex- pected value	Elas- ticity
25.....	10.25	-8.29	46.84	-2.33	64.09	-1.23	77.45	-.55	83.16	-.26	85.92	-.06
50.....	7.85	n.a.	38.71	-2.46	53.87	-1.29	65.69	-.57	70.67	-.26	72.94	-.05
60.....	5.16	-9.02	32.74	-2.59	46.36	-1.36	57.10	-.60	61.62	-.27	63.62	-.04
85.....	2.18	-10.53	15.84	-3.13	24.14	-1.65	31.07	-.72	34.02	-.31	35.23	-.03

Note: Family income is being held at \$3,000.

Table 20. Expected Value of Covered Physicians' Ambulatory Charges and the Deductible Elasticity of Demand for Selected Deductibles and Coinsurance Rates

Deductible (\$)	1 - ambulatory coinsurance rate; ambulatory coinsurance rate							
	.75; .25		.82; .18		.85; .15		.90; .10	
	Expected value	Elasticity	Expected value	Elasticity	Expected value	Elasticity	Expected value	Elasticity
30.....	10.07	-.16	46.16	-.12	63.20	-.11	81.98	-.11
40.....	9.23	-.49	43.32	-.35	59.62	-.32	77.59	-.29
50.....	7.85	-1.00	38.71	-.69	53.87	-.62	70.67	-.57
60.....	6.16	-1.72	32.74	-1.19	46.36	n.a.	61.62	-.97
85.....	2.18	-4.78	15.84	-3.39	24.14	n.a.	34.02	-2.79

Note: Family income is being held at \$3,000.

Table 21. Expected Value of Covered Physicians' Ambulatory Visits and Charges and the Ambulatory Coinsurance Elasticity of Demand for Selected Coinsurance Rates and Family Incomes

Family <sup>a/</sup> income- (\$)	1 - ambulatory coinsurance rate; ambulatory coinsurance rate <sup>b/</sup>									
	.82; .18		.85; .15		.88; .12		.90; .10		.92; .08	
	Expected value	Elas- ticity	Expected value	Elas- ticity	Expected value	Elas- ticity	Expected value	Elas- ticity	Expected value	Elas- ticity
	Visits (units)									
1,000..	3.57	-3.24	5.48	-1.66	7.08	-0.74	7.80	-0.36	8.19	-0.10
3,000..	4.14	-2.71	5.91	-1.35	7.23	-0.55	7.72	-0.21	7.88	0.01
5,000..	4.66	-2.25	6.22	-1.07	7.23	-0.37	7.50	-0.07	7.43	0.13
	Charges (\$)									
1,000..	33.15	-2.99	49.77	-1.62	64.31	-0.78	71.51	-0.42	76.14	-0.17
3,000..	38.71	-2.46	53.87	-1.29	65.69	-0.57	70.67	-0.26	72.94	-0.05
5,000..	44.24	-1.99	57.46	-0.99	66.34	-0.37	69.08	-0.10	69.05	0.08

<sup>a/</sup> Family income is best defined by the following question asked in the Demographic Record of the Current Medicare Survey: "What was the total income of your family living here during the past 12 months? This includes wages and salaries, net income from business or farm, social security cash benefits, pensions, dividends, interest, rent, and any other money income received by the members of this family."

<sup>b/</sup> The ambulatory coinsurance rate is applicable to doctors' bills when one has been an ambulatory patient.

Chart 4. Demand for Physicians' Services: Ambulatory Visits at Family Incomes of \$1,000, \$3,000, and \$5,000

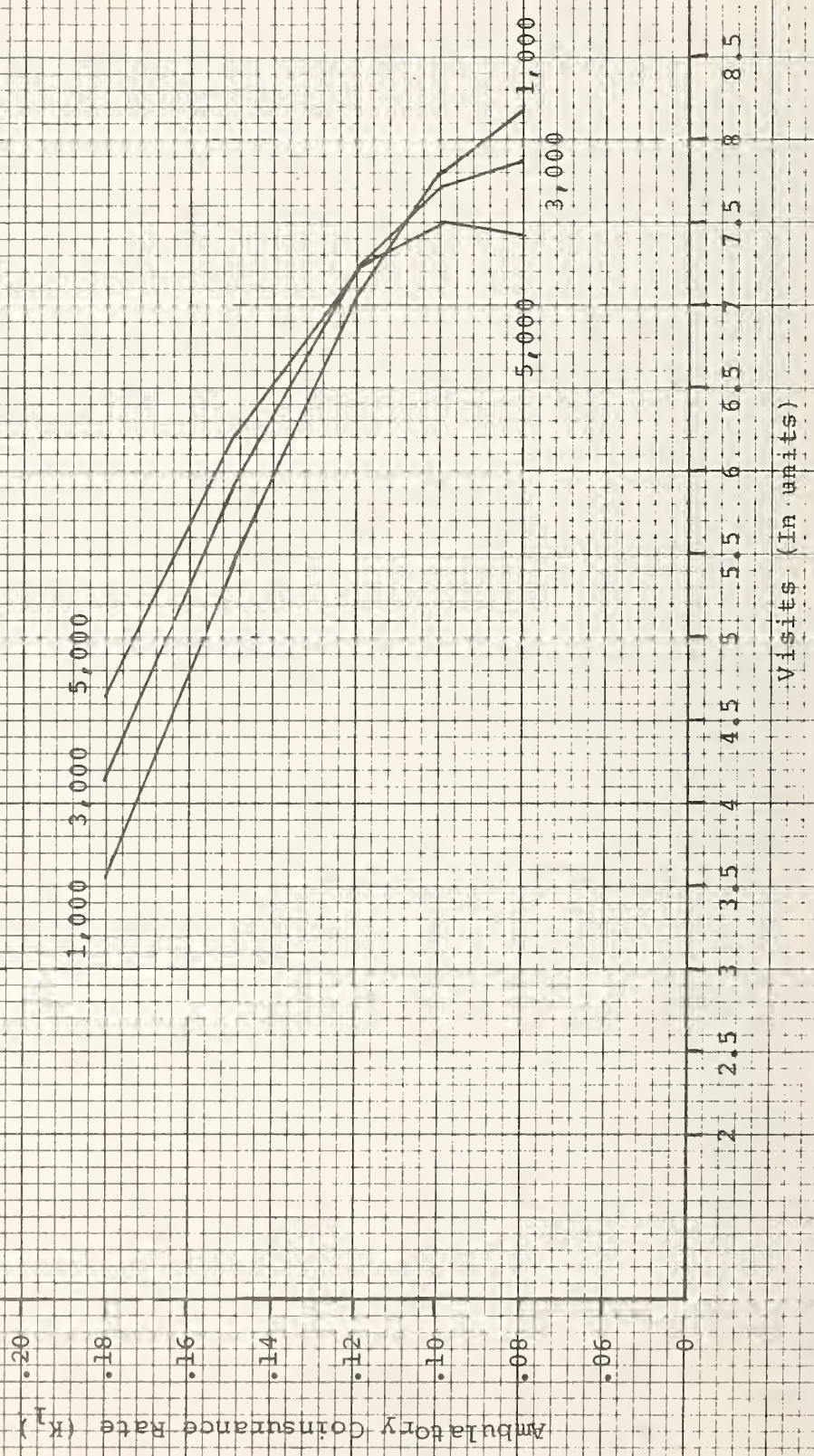


Chart 5. Demand for Physicians' Services: Ambulatory Charges at Family Incomes of \$1,000, \$3,000, and \$5,000

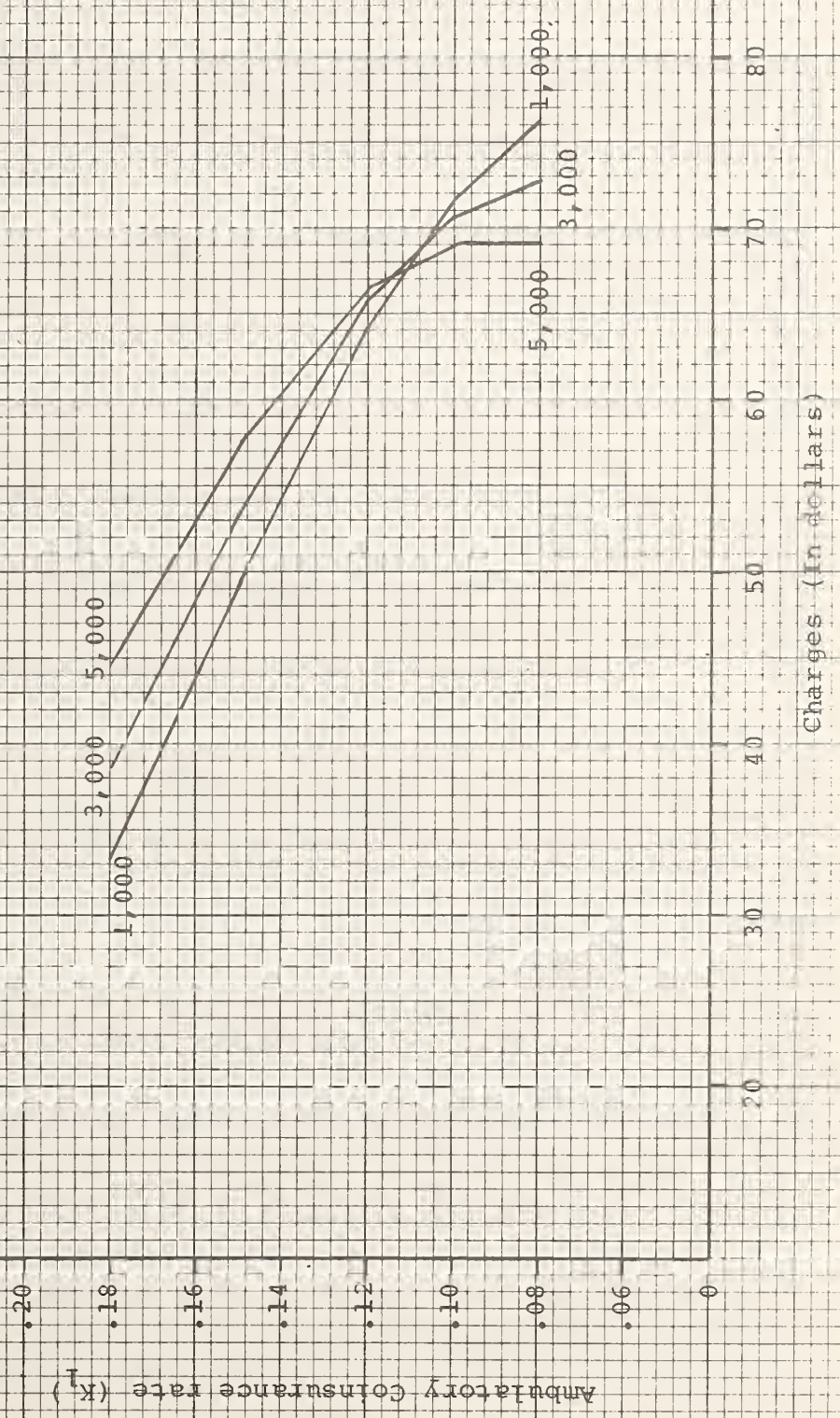


Chart 6. Substitution Between Deductible and Coinsurance at Select Levels of Utilization, Total Charges of \$30, \$50, and \$75

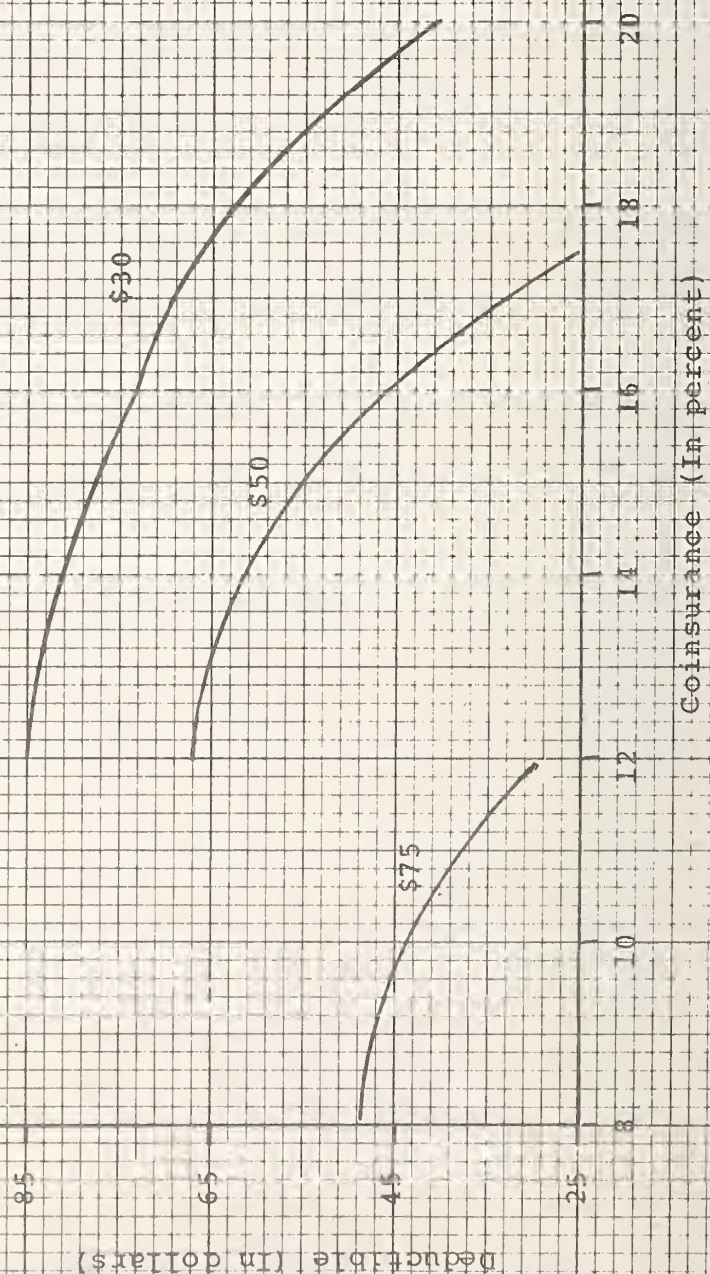


Table 19's main conclusions may be stated succinctly as follows:

1. For all deductibles, total charges for ambulatory care rise as the coinsurance rate declines.
2. For all coinsurance rates, charges decline as the deductible rises.<sup>1/</sup>
3. For all deductibles, demand becomes less elastic with respect to coinsurance as the coinsurance rate declines.

thereafter, as coinsurance declines, the number of visits declines, a "perverse" correlation. But the relevant factor is the correlation, the expected or the perverse, that basically characterizes the sample. Where in the sample distributions of the independent variables do those maxima and minima occur; is the correlation puzzling over the greater part of the distribution of the independent variable or over only a small part? Visits and charges attain maxima with respect to income (somewhere well toward \$10,000), coinsurance (for the most part at about 0.08), and deductible (at about \$20). The sample medians of Y, K<sub>1</sub>, and D are \$3,000, 0.15, and \$50, respectively. When our relationships become perverse, we might presume that in these ranges of the independent variables the elasticities remain safely zero.

<sup>1/</sup> Variation in the deductible created by deducting from the statutory deductible of \$50 any charges that an individual carries over from the last quarter of the previous year may not lead to unbiased estimates of the effect of the deductible on demand. The objection is as follows: those with a carryover have been to the doctor in the quarter previous to our observation period (one year); they must be sick people; if it is concluded that a lowered deductible induces greater utilization, does this not merely mirror that sick people go to the doctor more than healthy people?

We tested whether a shift in the distribution of units over the year was conditional on having a carryover, using a contingency table and applying the chi-square test. If those with a carryover were sick in the fourth quarter of 1968, they were probably still sick in the first quarter of 1969; consequently, the pattern of utilization over the year of the carryovers ought to be different from that of those with no carryover. The test indicated that we cannot reject the hypothesis that the two patterns of utilization are the same; there is no evidence of a shift conditional on the carryover. This result removes the ambiguity about the effect of our deductible.

That is, demand becomes less and less responsive to coinsurance rate changes as the coinsurance rate falls lower and lower.<sup>1/</sup>

4. With the exception of the last coinsurance rate, i.e.,  $K_1 = 0.08$ , demand becomes more elastic with respect to coinsurance as the deductible rises. Demand becomes more and more responsive to coinsurance rate changes as the deductible rises higher and higher.

5. There may be an interaction between deductible and ambulatory coinsurance of the sort shown below. (For the purpose of illustration, one can select any consecutive pair of coinsurance rates or coverages; let us take 0.18 - 0.15.)

D	$K_1$		Change in demand from 0.18 to 0.15
	0.18	0.15	
25.....	46.84	64.09	17.25
50.....	38.71	53.87	15.16
60.....	32.74	46.36	13.62
85.....	15.84	24.14	8.30

This interaction effect, however, is not statistically significant.

Many of the expected values of covered physicians' ambulatory charges are the same in table 20 as in table 19, for the obvious reason that many of the values of deductible and coinsurance are the same. And there is no point to summarizing the behavior of charges with respect to variations in deductible or coinsurance; these conclusions have already been stated in the previous table. But as regards the new element, the deductible elasticity of demand:

1. For all deductibles, demand becomes less elastic with respect to deductible as coinsurance declines. While

<sup>1/</sup> Elasticity is the ratio of the proportional change in the dependent variable, e.g., visits, to the proportional change in an independent variable, e.g., coinsurance, deductible. Elasticities are pure numbers; they are measures that are independent of the units of measurement. An elasticity is defined with respect to a point on a demand curve; it could change from point to point on the same curve, and in our relationships does.

this is analogous to the behavior of the coinsurance elasticity, the latter varies over a far greater range.

2. For all coinsurance rates, demand becomes more elastic with respect to deductible as the deductible rises. Again, the behavior is analogous to the behavior of coinsurance elasticity; this time, however, the deductible elasticity varies over the greater range.

3. For values of deductible and coinsurance that are observed in our sample, demand is inelastic with respect to the deductible; the coinsurance elasticity is so sensitive to the value of coinsurance that demand is both elastic (at high coinsurance rates) and inelastic (at low coinsurance rates) with respect to coinsurance.

In table 21, visits and charges react the same way in relation to income:

1. For all incomes, physicians' services demanded rise as the coinsurance rate declines.

2. For coinsurance rates  $K_1 = 0.18$ ,  $0.15$ , and  $0.12$ , demand rises as income rises; for  $K_1 = 0.10$  and  $0.08$ , demand seems to decline as income rises.

3. For all incomes, demand becomes less elastic with respect to coinsurance as the coinsurance rate declines.

4. For all coinsurance rates, demand becomes less elastic with respect to coinsurance as income rises.

5. - The interaction between ambulatory coinsurance and family income implicit with respect to both visits and charges is a statistically significant effect in both cases, as shown on the following page.

This interaction effect is particularly important as it reveals (1) that the "poor" are affected more when coinsurance is raised; and (2) that differences in utilization between "rich" and "poor" tend to be closed when coinsurance declines. This happens so rapidly in our table that by a coinsurance rate of 10 percent the gap is closed.

6. Corresponding coinsurance elasticities are slightly higher for visits than for charges.

Charts 4 and 5 trace demand curves for ambulatory physicians' services that are implicit in table 21.  $K_1$  is the

Y	K <sub>1</sub>		Change in demand from 0.18 to 0.15
	0.18	0.15	
	Visits		
1,000.....	3.57	5.48	1.91
3,000.....	4.14	5.91	1.77
5,000.....	4.66	6.22	1.56
	Charges		
1,000.....	33.15	49.17	16.62
3,000.....	38.71	53.87	15.16
5,000.....	44.24	57.46	13.22

price; and visits and charges are, alternatively, quantity demanded. All other variables are constant; the demands are those of the standard person. These curves are initially highly elastic, but by  $K_1 = 0.08$  they are completely inelastic.

The curves in chart 6 try to summarize some of the substitution or trade-off between deductible and coinsurance when charges are the dependent variable. All of the points on a curve induce or maintain a certain level of utilization or demand; the farther out (in) a curve lies, the lower (higher) is the level of utilization represented. The curves are concave to the origin. This implies that as coinsurance is increased, the reduction in the deductible must be greater and greater to induce or maintain the same level of utilization.<sup>1/</sup>

The coefficients of the assignment rate are:

$$-0.5047 \times 10^{-1} \text{ (visits)}$$

$$-0.5533 \times 10^0 \text{ (charges)}$$

The absolute values are small (0.05 of a visit, \$0.55 in charges), but the negative relationship between the

<sup>1/</sup> If both the variation of demand-coinsurance and the variation of deductible-coinsurance are inverse, concavity to the origin is more plausible than convexity.

assignment rate and demand is not readily explained. Why should high assignment rates be associated with low utilization, and low assignment rates with high utilization?

The study of Medicare by Regina Loewenstein<sup>1/</sup> strongly suggested that there was no change (in fact, the figures showed a slight decline) in the per capita number of ambulatory medical visits as between immediately before and immediately after Medicare. And the great majority of the aged had gone from having no insurance for ambulatory medical care to up to 80 percent coverage. How can one reconcile these results with ours?

Perhaps the two results cannot be reconciled. Still, some differences in the methodologies ought to be pointed out. Loewenstein presents a comparison over time; we generalize from a cross-section. (Perhaps all of the variables being held constant in our cross-section simply change too rapidly over time; but this is not a persuasive explanation.) We argue a multivariate demand function estimated for an aged person; she draws her conclusion from a comparison of means of two samples.

Lastly, her study may have been too soon after Medicare; enrollees needed time to understand the program and to learn how to take advantage of it.

There is also the long recall period of the Loewenstein study, and the very short one of the CMS. She states, "Interview questions were designed to produce information on medical care utilization and charges for approximately one year before the date of the interview."<sup>2/</sup> In the case of the CMS, "Interviewers use a questionnaire to obtain information from each beneficiary about his use of medical care and of related services during the preceding month."<sup>3/</sup>

<sup>1/</sup> Regina Loewenstein, "Early Effects of Medicare on the Health Care of the Aged," Social Security Bulletin, April 1971.

<sup>2/</sup> Ibid., p. 5.

<sup>3/</sup> Office of Research and Statistics, Social Security Administration, Statistical Elements of Medicare, September 1968, p. 357.

#### 4. Possible Biases in Expected Values and Elasticities<sup>1/</sup>

Consider chart 5. It is not entirely satisfactory that this curve should be so elastic with respect to coinsurance for a series of  $K$ 's where the deductible is not exceeded. To illustrate from table 19: when  $D = \$60$ , for  $K_1 = 0.18$  the expected value is about \$33 and the elasticity is about -2.6.

From this, one might expect that, were  $K_1$  reduced a little, an aged person would easily exceed the deductible, or, if he did not exceed it, the elasticity at the lower  $K_1$  would be even higher than previously. Neither happens: the deductible is not exceeded for  $K_1 = 0.15$ , nor is the elasticity higher.<sup>2/</sup> The same pattern is to be observed in table 21 under charges for \$1,000 income.

Holding all variables but the coinsurance rate constant, a priori one probably would postulate an aged person's demand curve for ambulatory medical care that is relatively inelastic for high and medium  $K$ 's; then, below these, briefly, highly elastic (where the deductible is exceeded); and finally again relatively inelastic for very low  $K$ 's. And, while one should expect to verify it by the Hybrid relationships between visits and charges and a coinsurance purged of adverse selection, a curve like this would not be an easy one to fit. Still, even assuming a very approximate result, it would be different from ours.

As is plain from charts 4 and 5, our curves are highly elastic for high  $K$ 's, inelastic for medium  $K$ 's and (presumably<sup>3/</sup>) perfectly inelastic for low  $K$ 's. Whereas the postulated relationship is basically convex to the origin, the estimated curves are concave. Relative to the postulated

<sup>1/</sup> This section is optional for readers of a nontechnical background.

<sup>2/</sup> Let  $P = P(D, K)$ ; then  $P^0 = P(D^0, K^0)$  and  $P^1 = P(D^0, K^1)$ . Let  $X = X(P)$ ; then  $X^0 = X(P^0)$  and  $X^1 = X(P^1)$ . Assume  $X^0 < D^0$ . The following, then, ought to hold: if  $X^1 < X^0$ ,  $X^1 > D^0$ .

<sup>3/</sup> It is presumed to be perfectly inelastic with respect to coinsurance at very low coinsurance rates, although in this range the coinsurance-quantity demanded relationship is positively inclined.

curve, our curves overestimate demand for most K's. At low K's the postulated and the empirical curves are probably close to each other. For most K's, our curves overestimate the elasticity with respect to coinsurance, except for that range of K where all at once the postulated curve becomes highly elastic, and here we underestimate the elasticity.

Could an error have produced these differences? For instance, in the Methodological Note at the end of III.C.1, it is shown that in certain cases an error would be committed in the measurement of coinsurance: K would be said to lie between 0.0 and 0.2, when, in fact, it lies at 0.0. If the number of instances in which it is committed is not small, this measurement error could have led to our curves and to the differences just noted. In other words, a displacement like this, unless it involves a negligible number, is in line with our estimated relationships.<sup>1/</sup>

### C. Deductible and Coinsurance as Functions of Out-of-Pocket Cost and Third-Party Payment

#### 1. Patterns of Out-of-Pocket Cost and Third-Party Payment

The statutory deductible and coinsurance rate do not vary; in 1969, these were \$50 and 20 percent, respectively. But we were aware that both act rather in the manner of upper bounds or limits. Many individuals purchase insurance in addition to SMI; this tends to reduce both the deductible and coinsurance rate below the statutory upper limits. Moreover, the provision for carryover of deductible, quite apart from any complementary insurance, effectively creates variation in the deductible between \$0 and \$50.<sup>2/</sup>

<sup>1/</sup> Note that, if there is measurement error, it occurs with the "tainted" coinsurance rates, i.e., a "tainted" rate of 0 percent would be said to be a "tainted" rate between 0 percent and 20 percent. The empirical relationships, however, are based on "purified" rates.

<sup>2/</sup> "Carryover: Any expenses incurred by an individual in the last 3 months of a calendar year and applied to the deductible for that year may be carried over and applied to the deductible for the next calendar year. In order to provide information

The present section describes, step by step, how we "observed" or "measured" variation in the deductible and the coinsurance rate, especially in the latter, which could not be observed or measured directly although it was known to exist. The task of the present section is to describe how patterns of out-of-pocket cost and third-party payment disclosed the variation and permitted us to go on to reach the conclusion that the deductible and the coinsurance rate are essentially instruments to control utilization. The source of the information is a set of questions in the Current Medicare Survey, dealing with the payment of that part of doctors' bills not covered by Medicare.

In the Current Medicare Survey (CMS),<sup>1/</sup> the following question can be found toward the bottom of pages 2, 4, and 6:

- a. For this bill, who will pay the part not covered by Medicare?
- b. Who else will help to pay the part not covered by Medicare?

☐ Self or spouse  
☐ Family  
☐ Friends  
☐ Blue Cross/Blue Shield  
☐ Pvt. Ins. Co.  
☐ Welfare  
☐ Employer  
☐ Union  
☐ Other (specify)  


---

☐ No one else  


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for this carryover, the medical insurance sample is designed to run for 15 months beginning with the fourth quarter of a calendar year." (U.S. Department of Health, Education, and Welfare, Social Security Administration, Office of Research and Statistics, RS Health Insurance and Statistics, Current Medicare Survey Report, July 12, 1971, p. 25.)

<sup>1/</sup> U.S. Department of Commerce, Bureau of the Census, acting as collecting agent for the Social Security Administration, Current Medicare Survey, Form SSA-1758. We have quoted from 11-68; the wording is practically identical in 12-69, the questionnaire that corresponds to our 1969 cross-section. This question is answered whenever there was a covered visit to a doctor or medical person. On page 2, it is answered with reference to ambulatory medical care; on page 4, with

For our purposes we grouped these answers to "who will pay the part not covered by Medicare" as:

1. Self or spouse, family, friends
2. All other choices, i.e., BC/BS, Pvt. Ins. Co., Welfare, etc.

Depending on how a sample person who used covered services answers, three different patterns of out-of-pocket cost and third-party payment result from the grouping: answers (1) only; answers (2) only; answers (1) and (2). The patterns in turn could be applied to determining the insurance status of a sample person. A person who answered with (1) only could be said to have only Medicare, that is, no insurance complementary to Medicare filling in its gaps; a person who answered with (2) only could be said to have full complementary insurance; and a person who answered with (1) and (2) could be said to have partial complementary insurance.<sup>1/</sup>

It is possible to determine the insurance status of individuals with respect to each of three kinds of medical care: ambulatory medical care (Section 1 in the CMS); in-hospital medical care (Section 2); and nursing-home medical care (Section 3). (Actually, the three kinds of care are three different places of service.) In other words, one could have nothing but Medicare for Section 1 and full complementary insurance for Section 2. The insurance statuses of sample persons with respect to ambulatory and in-hospital care, it will be seen, will prove to be most fruitful data.

The period of observation was 1 year, 1969. Preselected sample persons could leave the sample by dying, choosing to stop being interviewed every month, dropping SMI, or simply getting lost; we restricted ourselves to preselected sample persons who had 12 interviews during the year. Since the passage of time introduces ambiguity into the determination of the insurance status from the patterns of out-of-pocket cost and third-party payment, procedures were devised to deal with it. When the observation period is short enough, there cannot

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reference to hospital stays overnight or longer; and on page 6, with reference to nursing home, sanitarium or similar place.  
<sup>1/</sup> The sample is limited to SMI enrollees who used covered services.

be ambiguity; there can be only one visit; and one has to answer (1), (2), or (1) and (2). When the observation period is as long as a year, there can be several visits and, with respect to some, one could answer (1); with respect to others, (2); and with respect to still others, (1) and (2). In short, the answers do not have to be consistent in a period long enough to allow more than one visit. There are several plausible explanations as to why this is so. According to our definitions, only those users of covered services who consistently answered (1), that is, who never answered anything but (1), were designated as having no complementary insurance; only those who consistently answered (2), that is, who never answered anything but (2), were designated as having full complementary insurance. All others were designated as having partial complementary insurance.

There is one important exception to all of this. Sample persons who from their replies have been classified as having no complementary insurance might still have some complementary insurance. Complementary insurance may be of the kind requiring the insured to pay all or part of the deductible. Many who could claim partial complementary insurance may simply have been observed in the CMS paying the deductible, but not meeting the \$50 to qualify for coinsurance. To guard against these cases, all "noes" were doublechecked against their replies to questions 17c and 17e in the semiannual Demographic Record (DR).<sup>1/</sup> If replies to questions 17c or 17e (the first is pertinent to Section 2, in-hospital care; the second to Section 1, ambulatory care) indicated that someone whose insurance status was "no" initially (from the CMS) did

<sup>1/</sup> Question 17 of the Demographic Record reads as follows:

- 17a. Besides Medicare, are you covered by any health insurance that pays all or part of hospital bills?
- b. What is the name of the insurance company?
- c. Besides Medicare, are you covered by any health insurance that pays all or part of the doctors' bills when you are in a hospital?
- d. What is the name of the insurance company?
- e. Besides Medicare, are you covered by any health insurance that pays all or part of the doctors' bills when you are NOT in a hospital?
- f. What is the name of the insurance company?

(U.S. Department of Commerce, Bureau of the Census, Demographic Record, from SSA-1758B [1-70].)

in fact have complementary medical insurance, his insurance status was changed in our records from "no" to "partial." If the replies in the Demographic Record confirmed those in the CMS, the initial determination stood.<sup>1/</sup>

The first step, to recapitulate, is to make an individual's insurance status, with respect to a given kind of medical care, a function of the pattern of out-of-pocket cost and third-party payment. The second step is to make both his deductible and his coinsurance rate functions of his insurance status.

Let

$D_{ij}$  = the deductible of the  $i$ th person with respect to Section  $j$   
 $K_{ij}$  = the coinsurance rate of the  $i$ th person with respect to Section  $j$   
 $IS_{ij}$  = the insurance status of the  $i$ th person with respect to Section  $j$

where

$i = 1, 2, \dots, n$   
 $j = 1, 2$   
 $D_{ij} = D(IS_{ij})$   
 $K_{ij} = K(IS_{ij})$

The definitions of the  $D$  and  $K$  functions are:

$IS_{ij}$	Function
	$D_{ij}$
No or partial.....	\$50 minus the carryover of the $i$ th person
Full.....	\$0

<sup>1/</sup> In Section 1, 311 persons were changed over in this manner; in Section 2, 67; in Section 3, 16. In appendix A see the frequencies for "no," "partial," and "full" complementary insurance that result for each Section, particularly for 1 and 2.

$IS_{ij}$	Function
	$K_{ij}$
No.....	At the upper limit ( $L_2$ )
Partial.....	Between limits ( $L_3$ )
Full.....	At the lower limit ( $L_1$ )

Next we let  $L_2 = 0.2$  and  $L_1 = 0.0$ . These values for  $L_1$  and  $L_2$  assume that total covered charges are allowed (as is done in the CMS Reports of the Office of Research and Statistics when potentially reimbursable charges are computed). Put another way, this assumption in effect sets upper and lower limits on the coinsurance rate of 20 and 0 percent respectively.

#### Methodological Note<sup>1/</sup>

Measurement errors with regard to the deductible and the coinsurance rate. The D and K functions involve some strong assumptions. They were necessary to be able to proceed with the quantification of D and K and, ultimately, with the testing and estimation of the demand for physicians' services. However, they could produce measurement error. In this note, we will try to show how it can come about.

First, a brief digression on the deductible of SMI is necessary. Two different deductibles really operate in SMI; however, both vary between \$0 and the statutory level of \$50. SMI enrollees are always in a position to choose between two levels. (The simplest assumption to make, should it be necessary, would be that one chooses the lower deductible.) The level that is selected (and there may be instances when the higher level is preferred or applied to himself by an individual) is the effective deductible.

To distinguish the two deductibles, one is the statutory deductible of \$50 minus any reduction brought about by the purchase of complementary insurance. The other is the statutory deductible minus any reduction brought about by the carryover; the carryover may be zero, or it may be as much as \$50. The first deductible varies as  $\$50 - R_1$  ( $R_1$  = reduction

<sup>1/</sup> This section is optional for readers of a nontechnical background.

of complementary insurance); the second as  $\$50-R_2$  ( $R_2$  = reduction of carryover).

For our purposes, five situations exhaust the possibilities of this joint variation:

$\$50-R_2$  is preferred to  $\$50-R_1$  where:

1.  $\$50-R_2 = \$50$
2.  $0 < \$50-R_2 < \$50$
3.  $\$50-R_2 = 0$

$\$50-R_1$  is preferred to  $\$50-R_2$  where:

4.  $0 < \$50-R_1 < \$50$
5.  $\$50-R_1 = 0$

The statutory coinsurance rate can also be reduced through the purchase of complementary insurance. Its variation can be exhaustively characterized by three situations:

1.  $K = L_2$
2.  $K = L_3$
3.  $K = L_1$

Combining the variations of deductible and coinsurance rate, we arrive at 15 possible situations, given in the first two columns of the scheme shown on the following page. Unfortunately, actual pairs are not generally observed.

One can map every one of the 15 pairs of deductible and coinsurance onto insurance status, for each pair logically implies one of the three forms of this status: "no," "partial," or "full."

IS-"no" is possible only if neither the effective deductible nor the effective coinsurance rate has been reduced by complementary insurance. (This does not mean that the effective deductible is the statutory deductible of \$50; given complementary insurance and the carryover provision, two deductibles operate at once. The effective deductible can be less than \$50 or even zero and not have been reduced

Case no.	Actual cases			As the case would be measured	
	Deductible (1)	Coin- surance rate (2)	Insurance status (IS) (3)	Deductible D (IS) (4)	Coinsur- ance rate K (IS) (5)
1...	$\$50-R_2=\$50$	$L_1$	P	$\$50-R_2=\$50$	$L_3^{a/}$
2...	$\$50-R_2=\$50$	$L_3$	P	$\$50-R_2=\$50$	$L_3^{b/}$
3...	$\$50-R_2=\$50$	$L_2$	N	$\$50-R_2=\$50$	$L_2^{a/}$
4...	$0<\$50-R_2<\$50$	$L_1$	P	$0<\$50-R_2<\$50$	$L_3^{b/}$
5...	$0<\$50-R_2<\$50$	$L_3$	P	$0<\$50-R_2<\$50$	$L_3^{a/}$
6...	$0<\$50-R_2<\$50$	$L_2$	N	$0<\$50-R_2<\$50$	$L_2^{b/}$
7...	$\$50-R_2=0$	$L_1$	F	$\$50-R_2=0$	$L_1^{b/}$
8...	$\$50-R_2=0$	$L_3$	P	$\$50-R_2=0$	$L_3^{b/}$
9...	$\$50-R_2=0$	$L_2$	N	$\$50-R_2=0$	$L_2^{a/}$
10...	$0<\$50-R_1<\$50$	$L_1$	P	$\$50-R_2$	$L_3^{a/}$
11...	$0<\$50-R_1<\$50$	$L_3$	P	$\$50-R_2$	$L_3^{a/}$
12...	$0<\$50-R_1<\$50$	$L_2$	P	$\$50-R_2$	$L_3^{b/}$
13...	$\$50-R_1=0$	$L_1$	F	$\$50-R_2=0$	$L_1^{a/}$
14...	$\$50-R_1=0$	$L_3$	P	$\$50-R_2$	$L_3^{a/}$
15...	$\$50-R_1=0$	$L_2$	P	$\$50-R_2$	$L_3$

N = No complementary insurance; P = partial; F = full.

a/ Either the deductible or the coinsurance rate would be measured as it actually is.

b/ Both the deductible and the coinsurance rate would be measured as they actually are.

by complementary insurance, if the individual has carried over an amount into the next year. It does not mean that the effective coinsurance rate is the statutory rate.)

IS-"full" is possible only if the effective deductible is zero and the effective coinsurance rate has been reduced to zero by complementary insurance.

Partial complementary insurance is all other possibilities with respect to effective deductible and effective coinsurance rate.

To summarize, actual deductible and coinsurance levels determine insurance status. This set is specified by 15 cases. The insurance status that corresponds to each is

given by column 3 of the scheme. But, as we showed, this same variable generates deductible and coinsurance levels for individuals in our sample according to the D and K functions. These are the deductible-coinsurance pairs we employ in the study. Insurance status can be observed; we tried to infer what we reasonably could from that, since actual deductibles and coinsurance rates generally cannot be observed. The fourth and fifth columns of the scheme make it possible to compare the actual cases with the way each would be measured from our assumptions.

Analysis of scheme. Let us consider some of the measurement errors. In the first nine cases given in the scheme, the deductible can never be incorrect; this is by definition. But, two times, the coinsurance rate is incorrect, Cases 1 and 4. It is important to understand the reason why this is so. Whenever IS is "partial" we infer that coinsurance is  $L_3$ , that is, it is between  $L_1(0.0)$  and  $L_2(0.2)$ ; but, in the first part of the scheme, IS-"partial" could also reflect  $L_1$ . Turning to the next six comparisons, we see that the deductible is correct only by chance in Cases 10-12 and 14-15, because the variation \$50- $R_2$  is used in place of the variation \$50- $R_1$ . The deductible is, however, correct in Case 13. The coinsurance is also correct in Case 13 and whenever IS-"partial" is in fact reflecting  $L_3$ , Cases 11 and 14. In the second part, IS-"partial" could also reflect  $L_1$  and  $L_2$ .

Certainly Cases 4, 10, 12, and 15 are likely to be trivial, as are Cases 5, 8, 11, and 14.<sup>1/</sup> In the former, coinsurance is inferred incorrectly from insurance status; in the latter, it is inferred correctly. What it comes down to then is that, given an instance of IS-"partial," are we really observing  $K = L_3$  (Case 2), as we assume; or is it in fact  $K = L_1$  (Case 1); or is it perhaps a roughly even mix of both? It follows that:

1. If Case 1 is trivial but Case 2 is not, we are really observing  $K = L_3$ , given an instance of IS-"partial"; the coinsurance rate of all with IS-"partial" is measured without error.

<sup>1/</sup> Supplementary table 8 shows the reason for this, in part at least; it gives the frequency and distribution of the carryover; as the carryover is the basis for the deductible; and its classes can be converted into deductible classes simply by subtracting the end-points from \$50.

2. If Case 2 is trivial but Case 1 is not, it is in fact  $K = L_1$  that we observe; and coinsurance is measured with error for a sizable fraction of the sample, i.e., essentially for all those with IS-"partial."

3. If neither Case 1 nor Case 2 is trivial, some of the assumed  $K = L_3$  are really  $K = L_3$  and some are in fact  $K = L_1$ ; and the measurement error is confined to only a part of those with IS-"partial."

Given the possibility of item 2 or 3, many times coinsurance is said to be between 0 and 20 percent when it is in fact 0 percent. Coinsurance in these instances is measured to be higher than it actually is. But there is no way to verify items 1, 2, or 3. We have no way of learning the frequencies of Cases 1 and 2.

Was it wise to infer  $K = L_3$  from IS-"partial"? We have speculated what it may have cost. Should, perhaps, one have inferred  $K = L_1$  from IS-"partial"?<sup>1/</sup> In retrospect, this was a critical choice. Except for hunches, there were few guides. The first alternative seemed the safer one.

## 2. Interpolating and Purging Coinsurance

Whenever insurance status for a type of care is "partial," the coinsurance rate for that type of care is assumed to lie between the upper and lower bounds on coinsurance. "In-between," unfortunately, is not an exact or quantified  $K$ . But to be able to employ it in the demand function, we would like to have a quantified  $K$ . To interpolate the "in-between" coinsurance rates from a relationship of the limits ( $L_1$  and  $L_2$ , giving each a value) to a set of explanatory variables, that was obtained by either Probit analysis or least-squares regression, is inappropriate.<sup>2/</sup> In short, a new estimating technique is necessary.

<sup>1/</sup> The latter, incidentally, would preclude the use of Two-Limit Probit. This method requires a trichotomous variation in  $K$ , i.e.,  $L_1$ ,  $L_2$ ,  $L_3$ . The inference that IS-"partial" means  $K = L_1$  leaves  $K$  varying dichotomously, i.e.,  $L_1$ ,  $L_2$ . Probit would have sufficed, but it would not have led to a quantification of coinsurance without further assumptions.

<sup>2/</sup> Some of the reasons have been cited in connection with Hybrid. Fundamentally, the dependent variable here is limited in a new way, from below and from above.

However, even if we could observe all of the coinsurance rates in our sample, a new statistical technique would need to be developed. Recall that in our model the coinsurance rate has first to be purged of the effects of self-selection. This is normally attempted by taking the linear, multiple, least-squares regression of coinsurance on the exogenous variables in the system and then replacing coinsurance in the demand for physicians' services equation by its estimated value in terms of the exogenous variables and applying least-squares to this reformulated relation. But for purging here, because the dependent variable is limited, least-squares regression is ruled out. And because the dependent variable has two limits, being limited from below and from above, Hybrid is ruled out.

In summary, the K function develops logically from the way the data are presented in the CMS. But, to proceed with it, this formulation requires a new estimating technique. Essentially, our problem was not the interpolation, or the correct interpolation, of the "in-betweens." Although it is desirable to have a continuously varying coinsurance rate, for example, to be able to compute demand elasticities, it could be set up as a trichotomously varying dummy variable. Our problem was not how to interpolate observed but nonquantifiable K's between observed and quantifiable K's (those at the upper and the lower limits), but to have an estimating technique with which to purge; one, moreover, that could estimate using observed but nonquantifiable K's. Later, the exogenous variables could be substituted to replace all observed (and, therefore, not purged) K's, quantifiable and nonquantifiable, by all estimated, purged, and quantified K's. This technique is discussed, briefly, in the next section. It is an extension of Hybrid and will be called Two-Limit Probit.

The estimators of Two-Limit Probit are always based on samples of users of covered services. The reason that nonusers of covered services are never in these samples is that their coinsurance rate cannot be observed to vary trichotomously; it can be observed to vary only dichotomously. Estimators based on samples of users were employed to give the purged coinsurance rates of nonusers as well. Therefore, all observed coinsurance rates for a kind of care, whether quantifiable or nonquantifiable, whether those of users or those of nonusers, were replaced by estimates from a single relation.

However, the coinsurance rates that entered the demand equations were not maximum likelihood values, obtained from the maximum likelihood solution and the two limits, but rather expected value estimates, calculated from the formula shown in table 22. The frequencies and distributions of the estimated  $K_1$  and  $K_2$  are given in supplementary table 7 and in supplementary charts 1 through 4.

### 3. Two-Limit Probit:<sup>1/</sup> The Necessary Estimating Technique

A continuous variable  $K$ , the coinsurance rate, is bounded by the limits  $L_1$  and  $L_2$ . The values of  $K$  between these limits are determined by the following relations:

$$K^* = \beta_0 + \sum_i \beta_i X_i \quad (5)$$

$$K = L_1 \quad \text{when } K^* - \epsilon \leq L_1 \quad (6)$$

$$K = L_2 \quad \text{when } K^* - \epsilon \geq L_2 \quad (7)$$

$$K = K^* - \epsilon \quad \text{when } L_1 < K^* - \epsilon < L_2 \quad (8)$$

where  $\epsilon$  is a normally distributed random variable with mean 0 and standard deviation  $\sigma$ . We wish to estimate from our sample the conditional distribution of the estimated value of  $K$  given the  $X$ 's.

Fortunately for our task, it is possible to estimate the necessary parameters even when values of coinsurance between the two limits are not known exactly. It is sufficient to know for each observation in the sample that coinsurance equals one or the other of the limits, or that it is between them.

The estimation method employed in this problem is an adaptation of Probit analyses, a statistical technique

<sup>1/</sup> Two-Limit Probit as described here is no more than a brief introduction to give the reader some idea of what it involves. It was developed by Professor Richard Rosett of the University of Rochester, building on his own "A Statistical Model of Friction in Economics," *Econometrica*, vol. 27, 1959, pp. 263-267; the previously cited article by Tobin; and the work of others. It will soon be published.

Table 22. An Example of Two-Limit Probit: Calculation of Expected Values

X	Maximum likelihood values $y^*_a/$	$\frac{y^*-L_1}{\sigma}$ $b/$	$\frac{y^*-L_2}{\sigma}$	$Q_1\left(\frac{y^*-L_1}{\sigma}\right)$	$P_2\left(\frac{y^*-L_2}{\sigma}\right)$	$L_2 P_2$
-0.5.....	2.0	3.976	0.0	.00003	.50000	1.0000
-0.4.....	1.8	3.579	-0.398	.00017	.34458	.68916
-0.2.....	1.4	2.783	-1.193	.00272	.11702	.23404
0.0.....	1.0	1.988	-1.988	.0233	.0233	.0466
0.2.....	.6	1.193	-2.783	.11702	.00272	.00544
0.4.....	.2	0.398	-3.579	.34458	.00017	.00034
0.5.....	0.0	0.0	-3.976	.50000	.00003	.00006

	$Q_2\left(\frac{y^*-L_2}{\sigma}\right)$	$(Q_2-Q_1)y^*$	$z_1\left(\frac{y^*-L_1}{\sigma}\right)$	$z_2\left(\frac{y^*-L_2}{\sigma}\right)$	$(z_2-z_1)\sigma$	Expected value estimates $E(y y^*)_c/$
-0.5.....	.50000	.99994	.00014	.39894	.20060	1.79934
-0.4.....	.65542	1.17945	.00066	.36827	.18491	1.68370
-0.2.....	.88298	1.23236	.00837	.19652	.09464	1.37176
0.0.....	.97670	.95340	.05508	.05508	0.0	1.00000
0.2.....	.99728	.52816	.19652	.00837	-.09464	.62824
0.4.....	.99983	.13105	.36827	.00066	-.18491	.31630
0.5.....	.99997	0.0	.39894	.00014	-.20060	.20066

a/  $y^* = 1.0 - 2.0X$ ; the estimates of the parameters of  $y^*$  are maximum likelihood estimates.

b/  $L_1 = 0.0$ ;  $L_2 = 2.0$ ;  $\sigma = 0.503$ .

c/ Two-limit probit expected values are calculated from

$$E(y|y^*) = L_1 Q_1\left(\frac{y^*-L_1}{\sigma}\right) + L_2 P_2\left(\frac{y^*-L_2}{\sigma}\right) + y^* \left\{ Q_2\left(\frac{y^*-L_2}{\sigma}\right) - Q_1\left(\frac{y^*-L_1}{\sigma}\right) \right\} - \sigma \left\{ z_2\left(\frac{y^*-L_2}{\sigma}\right) - z_1\left(\frac{y^*-L_1}{\sigma}\right) \right\}$$

where  $P(x)$  is the value of the cumulative unit-normal distribution function at  $x$ ;  $Q(x) = 1-P(x)$ ; and  $z(x)$  is the value of the unit-normal probability of density function at  $x$ .

originally developed for biological assay and modified for application to special problems of economics. An example of Two-Limit Probit is given in table 22 and chart 7. The expected value of  $K$ , given values of independent variables and limits, is from the formula in table 22.

D. The Model Tested: the Determinants  
of the Purged Ambulatory Care and In-  
Hospital Care Coinsurance Rates<sup>1/</sup>

1. The Variables and the  
Sample Sizes

We were able to quantify both the ambulatory and the in-hospital coinsurance rate,  $K_1$  and  $K_2$ , respectively, by relating their trichotomous variations<sup>2/</sup> by means of our new technique to 11 statuses<sup>3/</sup> comprising 24 dummy variables; 3 quantitative variables,<sup>4/</sup> 2 of which were squared; and 3 interaction terms.<sup>5/</sup> (See supplementary tables 3 and 4.)

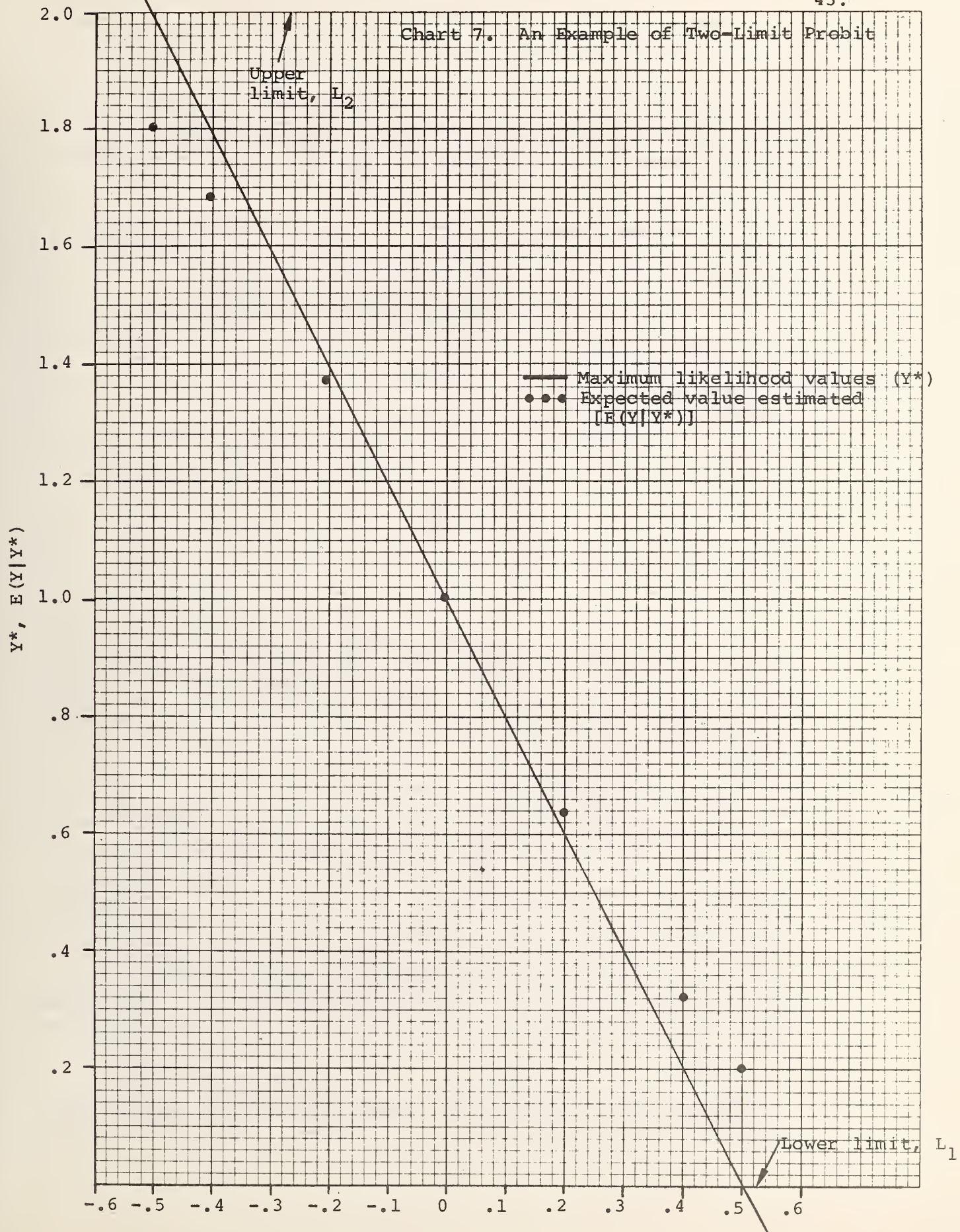
<sup>1/</sup> The first stages of the two-stage regression; the endogenous variable "physicians' services demanded" is omitted.  
<sup>2/</sup>  $L_2$  (upper limit),  $L_3$  (in-between),  $L_1$  (lower limit), where  $L_2=0.2$ ,  $L_1=0.0$ ,  $0.0 < L_3 < 0.2$ . An individual's  $K_1$  is not necessarily the same as his  $K_2$ . Consequently, the distribution of the three  $L$ 's can differ from one type of care to another. Insurance status from which variation in  $K$  derives is defined by section or for each type of care. And, one can be fully insured for in-hospital care but have nothing but Medicare for ambulatory. See III.C.1 and the end of supplementary tables 3 and 4.

<sup>3/</sup> Census region and size of place; household size; race; marital status; education; health evaluation; work status; age; sex; welfare status; income known status. These statuses figure in both  $K_1$  and  $K_2$ . Three statuses (hospital stay, living arrangement, and health limitations) that were employed in the visits and charges relationships are here excluded precisely on account of a probable high correlation with use of services.

<sup>4/</sup> In  $K_1$ : Regional price, ambulatory physicians' visits (RPY); regional assignment rate; income. RPY and income are squared. In  $K_2$ : Regional price, in-hospital physicians' visits (RP8); regional assignment rate; income. RP8 and income are squared.

<sup>5/</sup> WSY, WSYKS, WSY<sup>2</sup>. These three interactions are in both  $K_1$  and  $K_2$ . However, welfare status (WS), like insurance status, is defined for each section; so it is possible for an

Chart 7. An Example of Two-Limit Prebit



The sample sizes are very different in the two regressions:

Limit	Cases	Percent
$K_1$ : Ambulatory coinsurance		
L <sub>2</sub> .....	1,194	40
L <sub>3</sub> .....	1,541	51
L <sub>1</sub> .....	265	9
Total.....	3,000	100
$K_2$ : In-hospital coinsurance		
L <sub>2</sub> .....	233	31
L <sub>3</sub> .....	335	44
L <sub>1</sub> .....	193	25
Total.....	761	100

A trichotomous variation of the insurance rate, which is the minimum requirement for the application of Two-Limit Probit, is possible only for users of covered services. Recall that the answers of the users were classified according to one of three patterns; individuals who never used covered services in the observation period did not have to be asked "who will pay the part not covered by Medicare." For such individuals, there were no answers to be classified. This does not mean that the insurance status of a nonuser could not be determined; it could, from the Demographic Record and the State Buy-In Code. But it could not be determined as precisely as that of a user, and it could not vary trichotomously. For nonusers, one could know only whether they had complementary insurance or not; this meant that full complementary could not be distinguished from partial complementary. Therefore, in this case,  $K$  could vary only dichotomously. Naturally, the frequency with which in-hospital medical services are used in a sample is lower than the frequency with which ambulatory medical services are used. This explains the very different sample sizes. Apart from restricting ourselves

individual to be "welfare" for ambulatory care, but "no welfare" for in-hospital care.  $Y$  is income;  $YKS$  is income known status.

to users of covered services, individuals in the sample had to be SMI enrollees, to have reported 12 interviews, and to have available the appropriate price and the assignment rate.

## 2. Results

### a. Qualitative Variables

Altogether 11 qualitative variables are statistically significant in the two estimated relationships.

Variables	Effect on est. max. likelihood index (pct. X 100)
	Ambulatory coinsurance
Welfare status:	
No welfare.....	24.4
Census region and size of place:	
South rural.....	5.7
South urban.....	2.2
North Central rural.....	1.4
Household size:	
Two or more persons.....	1.4
Census region and size of place:	
North Central urban.....	1.0
Health evaluation:	
Worse than that of others.....	-1.2
Education:	
9 years or more.....	-2.8
	In-hospital coinsurance
Welfare status:	
No welfare.....	38.1
Census region and size of place:	
South rural.....	12.5
Race:	
Negro.....	9.5
Age:	
75 and over.....	4.5
Census region and size of place:	
South urban.....	4.4
Sex:	
Female.....	2.9
Household size:	
Two or more persons.....	2.7
Health evaluation:	
Worse than that of others.....	2.0

Five are common, six are not. The five common variables are:

Welfare status: No welfare  
 Census region and size of place:  
     South rural  
     South urban  
 Household size: Two or more persons  
 Health evaluation: Worse than that of others.

For presentation, these coefficients or effects are always ranked by signed magnitude of coefficient, from algebraically highest to lowest; the higher the value, the higher the coinsurance rate. The ranks of the five dummies are the same in both regressions. However, the impact of the variables on the index is greater for  $K_2$  than for  $K_1$ ; that is, under their impact, a given individual is more likely to pass from a very low coinsurance rate to one close to Medicare's in the  $K_2$  relationship than in the  $K_1$ . With the exception of "Health evaluation: worse" (which changes signs from  $K_1$  to  $K_2$ ), the variables that are common have the effect of raising both an individual's  $K_1$  and  $K_2$ .

Interestingly, in the ambulatory care regression, "Census region: North Central" raises coinsurance, and "Education: 9 years or more" lowers it; in the in-hospital care regression, "Race: Negro," "Age: 75 and over" and "Sex: Female" all raise coinsurance (or reduce coverage).

#### b. Welfare Status and the Welfare Status In- come Interactions

Welfare status has an especially powerful effect on coinsurance. We see that "no welfare" raises the maximum likelihood index of coinsurance very sizably in both  $K_1$  and  $K_2$ ; and in table 23 our standard sample person goes from a coinsurance rate of a little less than that of Medicare to one a little above zero when welfare status changes from "no" to "some." The expected value of  $K_1$  for \$2,500 income and "no welfare" is 16.9 percent; for \$2,500 and "some welfare" it is 3.9 percent, a difference of 13 percent. Much the same is true of the expected value of  $K_2$ . This difference, attributable entirely to the change in status, although it declines as income rises, does not decline much. It is still nearly 11 percent when income is \$8,750 (a very implausible level of "some welfare").

Table 23. Relationship of Coinsurance Rate, Ambulatory Visits ( $K_1$ ) to Income of Aged With and Without Welfare, and to Regional Price, Ambulatory Visits (RP4)  
(In percent)

Explanatory variable	$K_1$ : Expected value estimates
<u>Income (\$)</u>	
With some welfare:	
500.....	2.9
1,500.....	3.4
2,500.....	3.9
3,500.....	4.3
4,500.....	4.7
6,250.....	5.3
8,750.....	5.6
Without welfare:	
500.....	17.3
1,500.....	17.1
2,500.....	16.9
3,500.....	16.8
4,500.....	16.6
6,250.....	16.5
8,750.....	16.4
<u>RP4 (\$)</u>	
6.00.....	17.2
7.00.....	16.9
7.50.....	16.8
8.00.....	16.8
8.50.....	16.9
9.00.....	17.0
10.00.....	17.4
11.00.....	18.0

Note: The sample person we have standardized on is practically identical to the one of demand for physicians' services. There is no difference with respect to the common qualitative variables, i.e., from census region and size of place through sex. RP4 and the regional assignment rate in the relationship are set equal to their sample means. The differences from demand for physicians' services are slight and meaningless. Income and welfare status, when they are being held constant, are the same as in the demand for physicians' services.

The effect of the change in status is not fully disclosed by the coefficient of "no welfare." The full effect depends also on income because WS is joined to Y by two interactions: welfare status-income (WSY) and welfare status-income squared ( $WSY^2$ ). To illustrate:

Income	Effect of change in welfare status on estimated maximum likelihood index <sup>a</sup> / (percent X 100)	
	Coinsurance $K_1$	Coinsurance $K_2$
\$1,000.....	22.6	34.8
\$10,000.....	16.5	10.8

<sup>a</sup>/ For those with income known.

Neither for  $K_1$  nor for  $K_2$  does the change in income change the direction of the effect; going from "some welfare" to "no welfare" means a higher coinsurance rate or a lower coverage for all incomes; but in both cases the change in income reduces the size of the effect. (This is what is behind the decline in the difference between the expected values of coinsurance at the two statuses.) This statistically highly significant and sizable impact of welfare status on coinsurance can be explained by (1) all with "some welfare" should have complementary insurance; their insurance status should be either "partial" or "full"; (2) those with "some welfare" are a high proportion of those with full complementary insurance -- 74 percent in the case of ambulatory care, 54 percent in the case of in-hospital care.

#### c. Income and the Welfare Status-Income Interactions

The terms in income are statistically significant for  $K_1$  (all four are significant, in fact) but not for  $K_2$ . There are four terms ( $Y$ ,  $Y^2$ ,  $WSY$ , and  $WSY^2$ ), the last two being interactions between welfare status and income.

The first partial derivative of  $K_1^{1/}$  with respect to  $Y$  is:

<sup>1</sup>/ The relationship that determines the values of  $K_1$  between the two limits.

$$(\beta_1 + \beta_3^{WS}) + 2(\beta_2 + \beta_4^{WS})Y$$

When welfare status is "some welfare," the derivative becomes

$$\beta_1 + 2\beta_2 Y$$

When it is "no welfare" it is

$$(\beta_1 + \beta_3) + 2(\beta_2 + \beta_4)Y$$

$$\ln K_1 \frac{1}{Y}$$

$$\beta_1 = 0.1291 \times 10^4$$

$$\beta_2 = -0.7264 \times 10^{-9}$$

This indicates that the derivative is positive but that it becomes less so as Y rises. (It can become negative at a sufficiently high income.)

But,

$$(\beta_1 + \beta_3) = -0.0572 \times 10^{-4}$$

$$(\beta_2 + \beta_4) = 0.3526 \times 10^{-9}$$

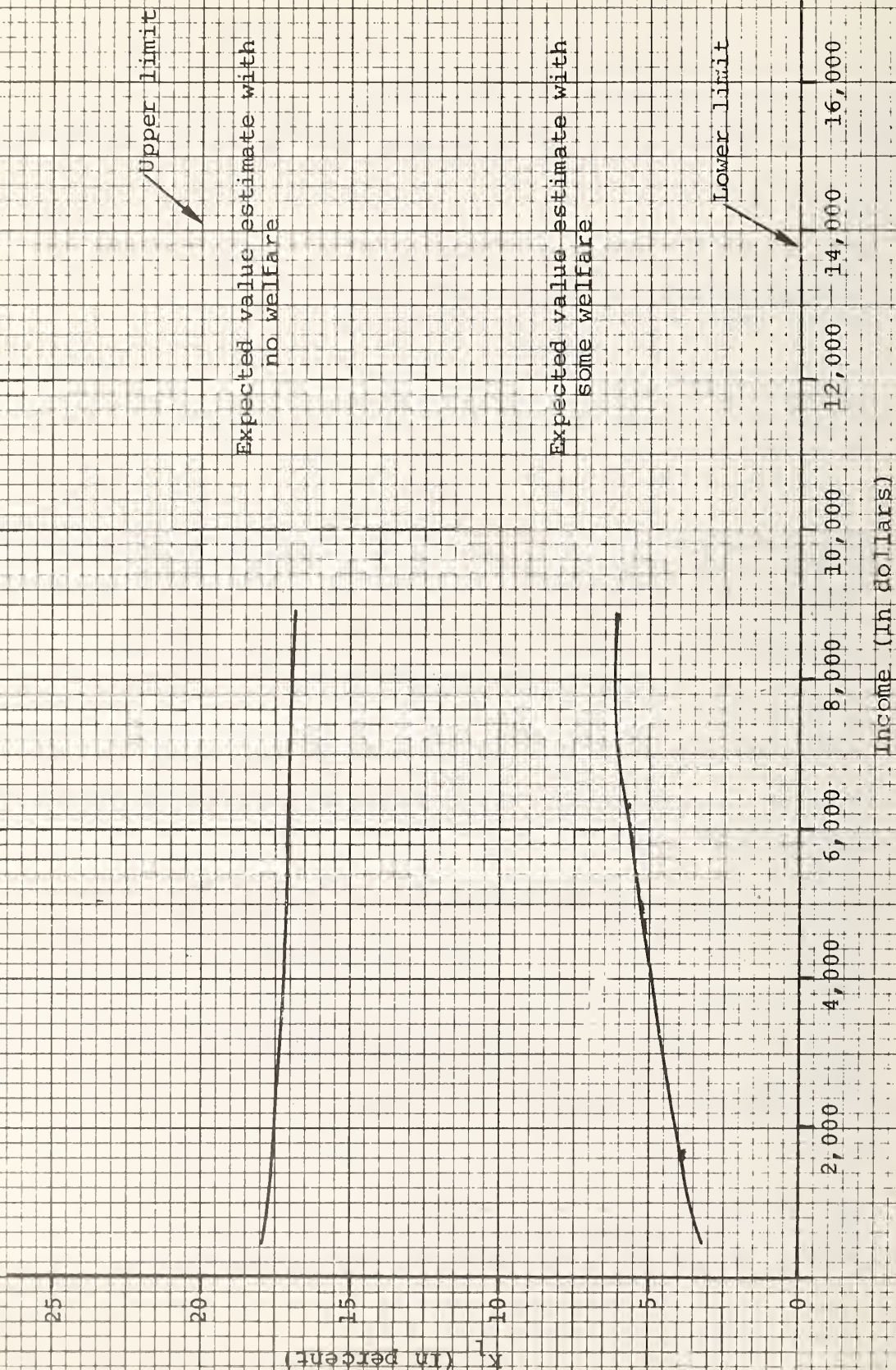
With the change in welfare status, the derivative becomes negative but less so as Y rises.<sup>2/</sup>

The practical consequence of these sign reversals is shown in table 23 and chart 8, in terms of the expected value locus. The coinsurance rate of those with "some welfare" rises as income rises, about doubling for this range of family income; in other words, these individuals lose coverage as their income gets higher. The coinsurance rate of those with "no welfare" falls as incomes rises, but not very much. They gain coverage with increasing income. (In both cases, the problem of a maximum or minimum reversing the variation

1/ Estimated  $\beta$ 's. For those with income known.

2/ The same occurs in  $K_2$ , but only the coefficient of WSY is statistically significant. Here a test on the linear function of parameters, using Student's T distribution, is appropriate to determine whether  $(\beta_1 + \beta_3)$  and  $(\beta_2 + \beta_4)$  are statistically different from zero.

Chart 8. Relationship of Coinsurance Rate, Ambulatory Visits ( $K_1$ ) to Incomes of Aged With and Without Welfare



crops up; but both times it happens at high enough values of income to permit us to ignore it, particularly in the case of "some welfare.")

d. The Roles of Prices  
and the Assignment Rate

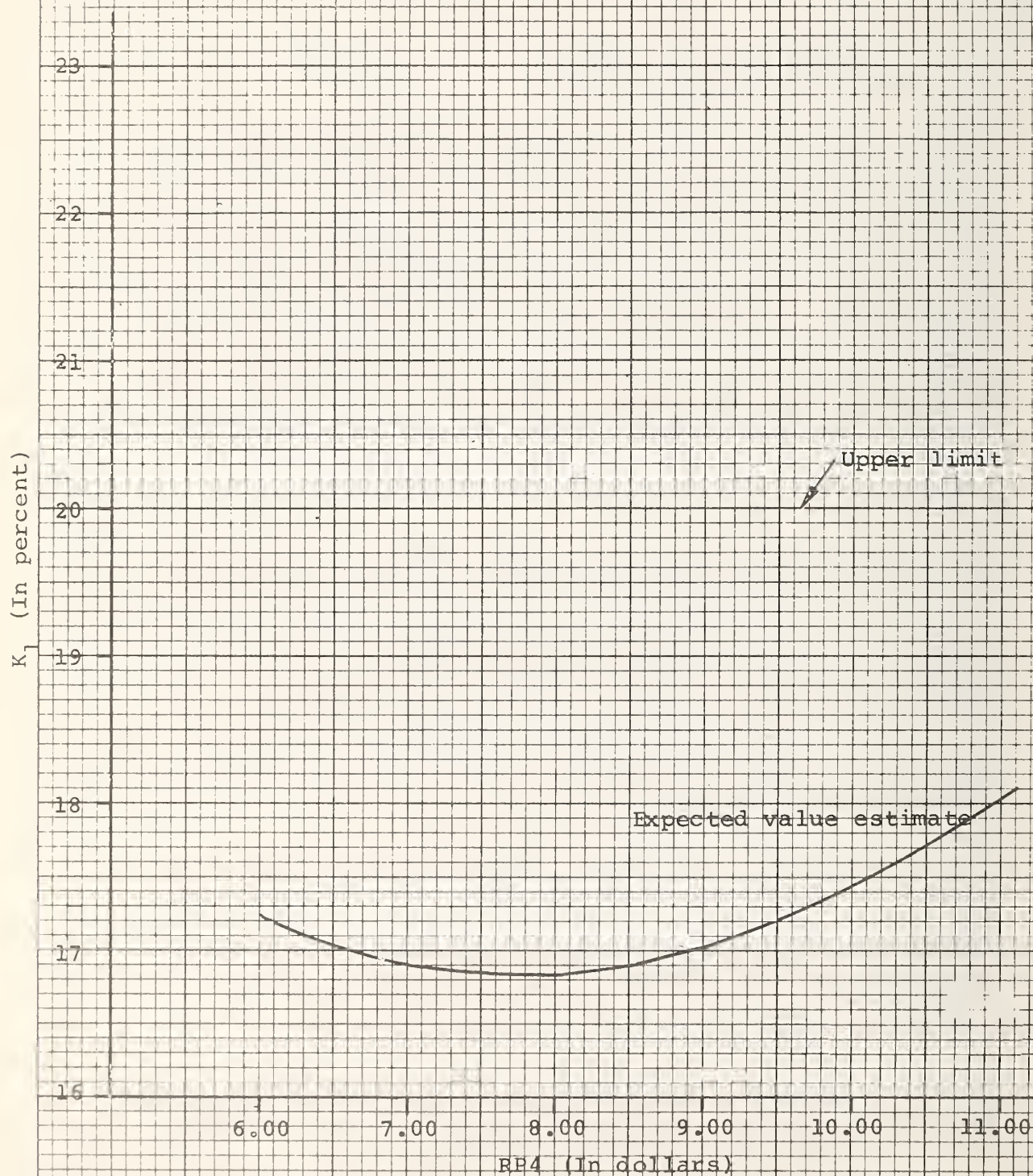
The coefficients of regional price: ambulatory physicians' visits,  $RP_4$  and  $RP_4$  squared, are highly significant. Initially, coinsurance declines as  $RP_4$  increases; the minimum occurs approximately where price equals \$8, and after \$8 the coinsurance rate increases as  $RP_4$  increases (chart 9). As the median physicians' fee in the sample is also \$8, this means that for about one-half of the sample the correlation is negative; for the other half, it is positive. For the lower range of the price of care, the higher the price is, then the higher is the coverage; for the upper range, the higher the price is, then the lower is the coverage. It may be that in the lower range of the price of care, the price of insurance is also low and stable, making for a negative correlation between  $K_1$  and  $RP_4$ ; but in the upper range it is rising rapidly, forcing a positive correlation.

Professor M.S. Feldstein has explained the relationships between coinsurance and price in terms of circular causality. If the elasticity of demand for ambulatory physicians' services is between 0 and -1, an increase in the price of physicians' services increases the total expenditure on them. This, in effect, increases the expenditure risk against which the individual insures and therefore raises the demand for insurance. The effect of an increase in insurance is to raise the demand for services. In normal circumstances, then, an increase in insurance leads to a rise in the price of services.<sup>1/</sup>

In the  $K_2$  relationship, only the coefficient of  $RP_8$  squared is statistically significant; and it is positive. The pattern of behavior of  $K_2$  with respect to  $RP_8$ , however, is practically the same as that of  $K_1$  with respect to  $RP_4$ ; i.e., falling to a minimum around the median of price, and then rising.

<sup>1/</sup> M.S. Feldstein, The Welfare Loss of Excess Health Insurance, unpublished paper, Harvard Institute of Economic Research, Harvard University, October 1971.

Chart 9. Relationship of Coinsurance Rate,  
Ambulatory Visits ( $K_1$ ) to Regional Price,  
Ambulatory Visits (RP4)



ASR, the regional net assignment rate, has a negatively signed coefficient in both  $K_1$  and  $K_2$ ; but it is statistically significant only in the first.<sup>2</sup> The effect on the maximum likelihood index of  $K_1$  is less than one-tenth of 1 percent of additional coverage per point increase in the rate.

### E. The Model Tested: A Comparison of Office Visit and Clinic Visit Demands of an Enrollee

#### 1. Introduction

A visit to a doctor at his office and a visit to a doctor at a clinic (including, in this term, the emergency room of a hospital and outpatient department of an institution), even for the same ailment, are demands for two different services. In this section, we will concentrate on providing a deeper insight into the contrasting natures of these two demands.<sup>1/</sup>

There is no better way to go to the heart of the contrast than to discuss the findings of the Loewenstein study in this regard. Having found essentially no correlation between out-of-pocket cost and utilization of ambulatory physicians' services<sup>2/</sup> over time, she nevertheless believes that she can substantiate a positive correlation between out-of-pocket cost and utilization of clinic visits over time.<sup>3/</sup>

Although the study showed no significant changes in the proportion of persons with

1/ Definitions of home, office and clinic visits employed in the CMS receive more exposition than here in the notes to table 29. For us, clinic visits are the residual when home and office visits are deducted from ambulatory physicians' visits.

2/ Regina Loewenstein, "Early Effects of Medicare," p. 13. See the table; see too our table 28.

3/ At the end of the previous sections, we contrasted the first part with our own findings; ours were that the correlation between out-of-pocket cost and utilization of ambulatory physicians' services is significantly negative; demand is sensitive to the value of the deductible and highly sensitive to the value of coinsurance.

ambulatory visits before and after Medicare, substantial shifts for place of visit were reported under Medicare. Relatively more persons saw physicians in the office; fewer had home visits. The greatest shift was in the proportion with clinic visits. Before Medicare, 1 out of 7 aged persons reported visits to a clinic, emergency room, or health centers. Under Medicare, about 1 in 12 persons reported such visits.

The percentages with clinic visits declined for each segment of the population, but the relative drop was greatest for those residing in rural areas and smallest for persons in large metropolitan areas.... There was a considerable reduction in the proportion of Negroes with clinic visits -- from 25 percent before Medicare to 14 percent under Medicare. For whites the proportions with clinic visits were considerably lower -- 13 percent before Medicare and 8 percent under Medicare. A substantial gap still exists under Medicare, therefore, between the proportions of Negroes and of whites with such visits.<sup>1/</sup>

Implicit, here, is the following argument: Medicare beneficiaries took advantage of greatly reduced out-of-pocket costs not by increasing total utilization of ambulatory medical care, but by "converting" from a lower quality kind of ambulatory medical care, namely clinic visits, to higher quality kinds, mainly office visits. Again, it is hard for us to agree with the negative conclusion of the first part of the argument, that total ambulatory visits did not increase (we can go further; it is hard to believe our two findings can be reconciled). But the second part, if taken by itself, could serve as the central hypothesis of this section; in other words, a Medicare beneficiary's response to variations in deductible and coinsurance may have a double aspect. Besides demanding more ambulatory physicians' services, does he also substitute office for clinic visits as coinsurance and/or deductible decline(s)? As income rises? Are clinic visits inferior goods? Giffen goods (a good with a positively sloped demand curve)? Can office visits be called higher

<sup>1/</sup> Regina Loewenstein, "Early Effects of Medicare," p. 13.

quality services than clinic visits? What shall be the criterion of quality? Price?

Loewenstein's definitions of office visit and clinic visit are different in important respects from those of the CMS. In her study, office visits included "emergency care by private doctor in emergency room of hospital" (p. 20). These would be clinic visits by our standards. On the other hand, clinic visits in the Loewenstein study probably included the services of doctors not in private practice together with the services of other medical persons. Again, this is not the case under the definition we employ.

Utilization rates calculated under the two sets of definitions are given below:

Place of visit	Percent with visits	
	Loewenstein study	
	1965	1967
	CMS-RRNA 12-month tape, 1969	
Private physician.....	68.5	71.9
Office.....	64.6	69.1
Clinic, emergency room, health center.....	14.2	8.6
Covered ambulatory physi- cians' visits.....	75	
Office.....	68	
Clinic.....	19	

For clinic visits, the difference in the utilization rates is very marked.

As the following tabulation<sup>1/</sup> shows, the bulk of ambulatory physicians' services are office visits, with the

<sup>1/</sup> These figures are based on our total sample of 4,567 aged persons. Home, office, and clinic visits and charges per

remainder evenly divided between home and clinic visits.

Place of visit	Percent of all charges	Percent of all visits	Average price (\$)
Home.....	11	10	10.17
Office.....	78	80	9.47
Clinic.....	11	10	10.50
All covered ambu- latory physi- cians' services..	100	100	9.65

Secondly, between the office and the clinic visit, the more expensive service is the clinic visit. This is corroborated when we compare the medians of the regional prices of office and clinic visits:

	<u>Median</u> <sup>1/</sup>
RP6 (office).....	\$ 9.00
RP7 (clinic).....	11.50

It seems puzzling. Price is often an indication of a higher quality of service; on the other hand, reduced utilization of clinic visits is considered good, as in the Loewenstein study. No doubt, there is much that is concealed in this difference between the two prices. Among the possible explanations: clinic visits are often covered by insurance, office visits rarely or never; this would bid up the price of the latter above the former. Also, individuals with little or no insurance coverage may not have the confidence to find, or may have difficulty finding, a personal physician; reliance by such individuals on scarce clinics again would raise the price of clinic visits above that of office visits. Coverage for all types of ambulatory physicians' care would provide the means and the confidence to receive treatment from

capita from the same sample are:

<u>Place of visit</u>	<u>Visits</u>	<u>Charges</u>
Home.....	0.56	\$ 5.69
Office.....	4.48	42.48
Clinic.....	0.58	6.07
All covered ambu- latory physi- cians' services.	5.62	54.24

<sup>1/</sup> See supplementary tables 12 and 13.

a personal physician at his office. Perhaps, too, the clinic visit packages a number of services that normally are fragmented into several office visits.

Consider the tabulation below.

Place of visit	Percent with visits	
	Welfare status	
	Some	None
Ambulatory <sup>a/</sup> .....	83	74
Office .....	71	68
Clinic .....	27	18

a/ All covered ambulatory physicians' visits. The same sample is employed for all three places of service; it happens to be the restricted sample of 3,954 persons. Those with "some welfare" are 13.1 percent of the sample; but they are 14.5 percent of the users of ambulatory visits, 13.6 percent of the users of office visits, and 18.7 percent of the users of clinic visits.

The "welfares" have a higher percentage for office visits and clinic visits, as well as a higher percentage overall. The average insurance coverage for ambulatory care among them is 96 percent; the average among the "non-welfares" is 84 percent. For office visits, the difference in percent of utilization is only 3 points; for all ambulatory care it is 9 points. This suggests that "non-welfare" users of clinic visits are more likely than "welfare" users to also use office visits. A segment of the welfare population relies exclusively on the clinic, from habit or necessity.

## 2. The Variables and the Sample Sizes

Office visits<sup>1/</sup> were related to the 14 statuses; 7 quantitative variables, 6 of which were also squared; and

<sup>1/</sup> The statuses (the 30 dummy variables), the quantitative variables and their squares, and the interactions, all are

16 interaction terms. (See supplementary table 5.) Clinic visits were related to the 14 statuses; 8 quantitative variables, 7 of which were also squared; and 18 interaction terms. (See supplementary table 6.)

The use of RP6 (regional price: office visits) and RP7 (regional price: clinic visits) in place of RP4 seems to be called for on theoretical grounds in both relationships.<sup>1/</sup> In clinic visits, they actually work.<sup>2/</sup> This explains the additional quantitative variable and squared term and the two additional interaction terms. Where RP4 was combined with D and C<sub>1</sub> to give DRP4 and C<sub>1</sub>RPY, both RP6 and RP7 are combined with D and C<sub>1</sub> to give DRP6, DRP7, C<sub>1</sub>RP6, C<sub>1</sub>RP7. The sample size of clinic visits is 3,904 persons, an individual being selected for the sample, as in ambulatory visits and charges, if he was an SMI enrollee, had 12 interviews, and the necessary prices and the assignment rate were available for him. One carrier did not have a sufficient frequency to compute RP7; 50 persons normally in the sample were "lost."<sup>3/</sup>

the same as when the dependent variable was ambulatory physicians' visits. Compare supplementary tables 1 and 5. The sample size is the same in both cases.

1/ All of the different regional prices derive from the Reasonable Charge Tabulations (often cited in the first part of this volume, e.g., table 2). We attempted to match a type of service in the CMS as closely as possible with averages from the Tabulations, recombining and recalculating as the need arose. RP6 was the average price charged in a carrier-region for physicians' medical care where the place of service was the office; RP7 was the average price charged in a carrier-region for physicians' medical care where the place of service was outpatient hospital. The averages are for the same year as the cross-section, 1969.

2/ A regression of office visits on RP6 (regional price: office visits) and RP7 (regional price: clinic visits) failed. None of the terms in RP6 was statistically significant; of the terms in RP7, only RP7 squared was significant. Moreover, the estimates produced by this regression were completely out of line with the estimates of ambulatory physicians' visits. They can be studied in table 25. Being so inappropriate, these two prices were replaced by a single price, RP4 (regional price: ambulatory physicians' visits).

3/ Clinic visits were also regressed on RP4 alone to supplement evidence in some comparisons; the results of this estimation can be studied in table 24.

### 3. Results

#### a. Qualitative Variables

Seventeen variables in total are statistically significant at 80 percent or higher confidence level in these two relationships. (Again, variables that served simply as residual classes in the sense of "unknown," "all other," etc., are not shown below, even if significant).

Variable	Effect on est. max. likelihood index (pct. X 100)
Office visits	
Living arrangement:	
Not in institution.....	10.6
Hospital stay:	
Yes.....	5.0
Health evaluation:	
Worse than that of others.....	3.7
Health limitations:	
No limitations.....	3.4
Health evaluation:	
Same as that of others.....	1.9
Health limitations:	
Other limitations.....	1.2
Sex:	
Female.....	1.2
Census region and size of place:	
South urban.....	0.3
Age:	
70-74.....	-0.6
75 and over.....	-0.7
Census region and size of place:	
Northeast rural.....	-1.6
West rural.....	-2.2
Race:	
Negro.....	-2.3
Clinic visits	
Living arrangement:	
Not in institution.....	4.0
Hospital stay:	
Yes.....	2.9
Census region and size of place:	
West urban.....	2.5
West rural.....	2.1

continued--

Variable	Effect on est. max. likelihood index (pct. X 100)
	Clinic visits
Health evaluation:	
Worse than that of others.....	1.5
Census region and size of place:	
North Central urban.....	1.2
North Central rural.....	1.1
Sex:	
Female.....	-0.7
Age:	
75 and over.....	-0.7
Household size:	
Two or more persons.....	-1.1

Six are common (apart from "hospital stay," "living arrangements," and "health evaluation" variables); these are "West rural," "75 and over," and "female." The sign of the "75 and over" coefficient and even its estimated value are the same for "office" and "clinic." In the cases of "West rural" and "female," the magnitudes of the corresponding coefficients are about the same, but the signs are different. Aged persons from the West rural region demand fewer office visits and more clinic visits than aged persons from the Northeast urban region; females 65 and over demand more office visits and fewer clinic visits than males 65 and over.

In addition, it is suggestive to compare the three statuses, "census region and size of place," "race," and "welfare status," in these two demand functions. (See tabulation on following page.)

Census region and size of place. Under office visits, in three of four possible comparisons of urban and rural in the same region, rural represents a fall in the index relative to urban. The exception is the South. Generalizing, the person living in the rural parts of a region demands fewer office visits than the person living in the urban parts. Under clinic visits, this pattern holds without exception, i.e., more clinic visits would be demanded in each urban area than in the corresponding rural area.

We might point out, also, that whereas in the case of office visits, the seven locations other than "Northeast

Variable	Office visits	Clinic visits
Census region and size of place:		
Northeast urban.....	$-.1644 \times 10^1$	$-.1056 \times 10^1$
Northeast rural.....	$-.1676 \times 10^1$	$.1233 \times 10^1$
North Central urban.....	$-.1255 \times 10^1$	$.1087 \times 10^1$
North Central rural.....	$-.5935 \times 10^1$	$.2529 \times 10^1$
West urban.....	$-.2177 \times 10^1$	$.2139 \times 10^1$
West rural.....	$.3000 \times 10^1$	$.5049 \times 10^1$
South urban.....	$.2066 \times 10^1$	$-.1462 \times 10^1$
South rural.....		
Race:		
White.....	$-.2331 \times 10^1$	$.5481 \times 10^0$
Negro.....	$-.4940 \times 10^1$	$-.5428 \times 10^0$
All other and unknown.....		
Welfare status:		
Some welfare.....	$.4373 \times 10^1$	$-.3755 \times 10^1$
No welfare.....		

urban" tend to have a lower index for office visits than "Northeast urban," in the case of clinic visits they tend to have a higher index than "Northeast urban." This suggests that the potential for office visits is greater in "Northeast urban" than in the rest of the country, while the potential for clinic visits is greater in the rest of the country than in "Northeast urban."

Race. Negroes demand fewer office visits than whites, but more clinic visits.

Welfare status. As in the case of Negroes, those with "some welfare" demand fewer office visits, but more clinic visits, than those with "no welfare."<sup>1/</sup>

In sum, these patterns strongly suggest that services in a physician's office are considered preferable to services

<sup>1/</sup> Given welfare status-income interactions, the full effect of the change in welfare status is not disclosed by this coefficient. But here income never changes the direction of its effect.

at a clinic. In this sense, clinic visits represent a lower quality of service than office visits. At the same time, we can detect persistence of habitual patterns in modes of service, when income, coinsurance, deductible, and a great many other determinants of demand are being held constant. The patterns may be those of physicians' choices of patients or place of service, or of the patients themselves. They transcend considerations of price alone. As we indicated previously, Medicare enrollees with welfare status are very well insured for ambulatory physicians' care; and yet a good many continue to rely entirely on clinics.

#### b. Quantitative Variables

For office visits, the terms in ambulatory coverage; in regional price: in-hospital physicians' visits; and in the net assignment rate (i.e., the terms in  $C_1$ , RP8, and ASR) are significant.

For clinic visits, the terms in ambulatory coverage; in the deductible; in regional price: office visits, and in the regional price: clinic visits (i.e., the terms in  $C_1$ , D, RP6, and RP7) are significant.<sup>1/</sup>

#### c. Interactions

For office visits, the coefficient of only one interaction term was significant: in-hospital coverage and regional price: in-hospital physicians' visits,  $C_2$ RP8. It tells us that, given an increase in  $C_2$ , the decrease in office visits demanded will be less at the higher RP8.

Many more coefficients of interactions are statistically significant in the case of clinic visits. Specifically:

$C_1$ RP6	+	RP6D	-
$C_1$ RP7	-	RP7D	-
$C_1$ D	-	RP8D	+
$C_2$			

<sup>1/</sup> Other things being the same, the clinic visits-deductible variation is inverse; the clinic visits-RP7 variation is, for the most part, also inverse; the clinic visits-RP6 variation is inverse when the prices are low and direct when they are high; the clinic visits-ambulatory coinsurance variation will receive fuller treatment elsewhere.

It is not easy to evaluate the meaning of these signs because some of the usual variations between the variable measuring demand and independent variables like  $C_1$ ,  $C_2$ ,  $D$  and regional price averages may not hold; here there is evidence that the variation between clinic visits and  $C_1$ , at least, may not be the usual direct one. In general, it is our feeling that the interaction effects of the demand for clinic visits are plausible only in a context where all or most of the variations between clinic visits and its important determinants are reversed from those normally assumed or found.

#### 4. How Coinsurance Affects the Demands for Office and Clinic Visits of the Aged Person

The behavior of office visits in table 24 is essentially like that of ambulatory physicians' visits in table 21.

1. For all incomes, office visits demanded rise as the coinsurance rate declines.

2. For coinsurance rates  $K_1 = 0.18, 0.15$ , and  $0.12$ , demand rises as income rises; for  $K_1 = 0.10$ , there is no change in demand as income rises; for  $K_1 = 0.08$ , demand declines as income rises.

3. For all incomes, demand becomes less elastic with respect to coinsurance as the coinsurance rate declines.

4. For all coinsurance rates, demand becomes less elastic with respect to coinsurance as income rises.

5. The interaction between ambulatory coinsurance and family income is at work in table 24 just as it was in table 21, only here it is not statistically significant.

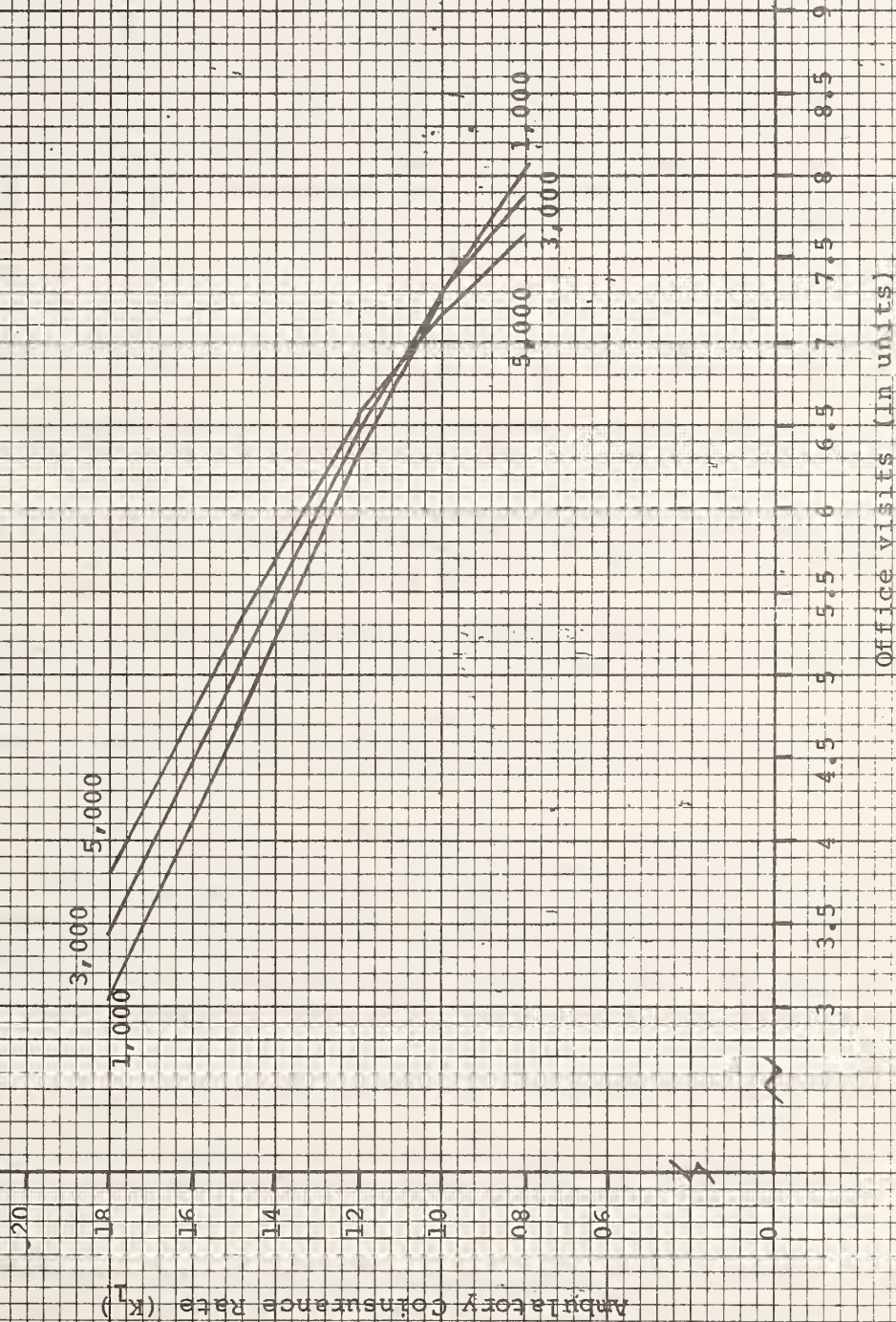
There are some differences between tables 24 and 21. One is that elasticities are higher in table 24. Another difference, connected with the first, is that the demand for office visits is flatter than the demand for ambulatory visits. Compare charts 4 and 10. This must mean that the slope of office visits was steeper than the slope of ambulatory visits with respect to ambulatory coverage.

Table 24. Expected Value of Office and Clinic Visits and the Ambulatory Coinsurance Elasticity of Demand for Selected Coinsurance Rates and Family Incomes, Employing Regional Price, Ambulatory Visits

Family income (\$)	1 - ambulatory coinsurance rate; ambulatory coinsurance rate									
	.82; .18		.85; .15		.88; .12		.90; .10		.92; .08	
	Expected value	Elasticity	Expected value	Elasticity	Expected value	Elasticity	Expected value	Elasticity	Expected value	Elasticity
	Office visits									
1,000..	3.03	-3.15	4.69	-1.80	6.32	-.97	7.27	-.60	8.05	-.34
3,000..	3.43	-2.74	5.02	-1.56	6.48	-.82	7.28	-.49	7.90	-.26
5,000..	3.80	-2.37	5.28	-1.33	6.54	-.67	7.19	-.38	7.64	-.18
	Clinic visits <sup>a/</sup>									
1,000..	.13	1.24	.09	2.13	.05	2.73	.03	2.94	.02	2.96
3,000..	.19	1.88	.13	2.68	.06	3.22	.04	3.40	.02	3.39
5,000..	.25	2.49	.15	3.24	.07	3.75	.03	3.92	.01	3.88

<sup>a/</sup> Covered physicians' clinic visits include all covered physicians' ambulatory visits except office and home.

Chart 10. Demand for Physicians' Services: Office Visits at Family Incomes of \$1,000, \$3,000, and \$5,000



It is interesting to probe into why this steepening of the slope occurred. The utilization rate falls from 75 percent to 68 percent between ambulatory and office visits. That of the "non-welfares" falls from 74 percent to 68 percent, but that of the "welfares" from 83 percent to 71 percent. The ambulatory coverage of the former averages 84 percent; that of the latter, 96 percent. A consequence of the differential decline in utilization was that the average ambulatory coverage of nonusers rose from 85.2 percent (ambulatory visits) to 85.6 percent (office visits); but the average coverage of users declined from 85.9 percent (ambulatory visits) to 85.8 percent (office visits). This tended to produce the steeper slope.

The behavior of clinic visits in table 25 can profitably be compared with that of office visits in table 24.

1. For all incomes, clinic visits demanded first rise and then decline as the coinsurance rate declines.

2. For coinsurance rates  $K_1 = 0.18, 0.15, \text{ and } 0.12$ , demand rises as income rises; for  $K_1 = 0.10 \text{ and } 0.08$ , demand appears to fall as income rises.

3. For all incomes, demand becomes less elastic with respect to coinsurance as the coinsurance rate declines.

4. For all coinsurance rates, demand becomes less elastic with respect to coinsurance as income rises.

The decline in demand as income rises that we note at  $K_1 = 0.10$  and  $K_1 = 0.08$  indicates that clinic visits become an inferior good at high levels of insurance coverage. (If, prices being held constant, the quantity of a particular good demanded rises as income rises, the good is said to be "superior" in that region; if, however, the quantity demanded declines as income rises, the good is said to be "inferior" in the region.) This tends to happen too to ambulatory visits (table 21) and office visits (table 24).

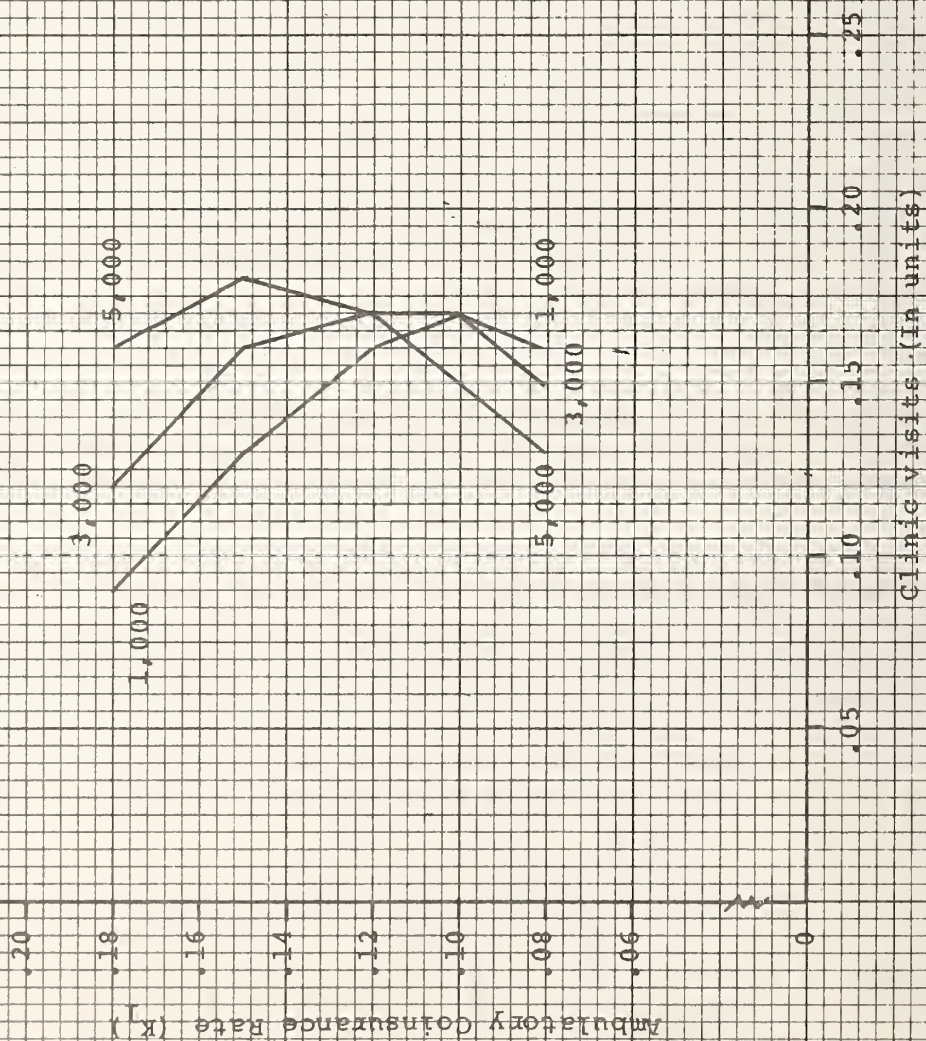
The fascinating possibility disclosed in this table is that the demand for clinic visits may be an instance of the so-called Giffen good -- a good with a positively inclined demand curve. Below a coinsurance rate of 12 percent, the demand for clinic visits rises as the coinsurance rate rises (chart 11). It is true that in some of our other

Table 25. Expected Value of Office and Clinic Visits and the Ambulatory Coinsurance Elasticity of Demand for Selected Coinsurance Rates and Family Incomes, Employing Regional Price, Office Visits; and Regional Price, Clinic Visits

Family income (\$)	1 - ambulatory coinsurance rate; ambulatory coinsurance rate									
	.82; .18		.85; .15		.88; .12		.90; .10		.92; .08	
	Expected value	Elasticity	Expected value	Elasticity	Expected value	Elasticity	Expected value	Elasticity	Expected value	Elasticity
	Office visits									
1,000..	2.62	-6.09	5.97	-3.28	10.16	-1.71	13.03	-1.08	15.77	-.67
3,000..	2.86	-5.55	6.07	-3.02	9.94	-1.59	12.55	-1.01	15.00	-.63
5,000..	3.10	-5.03	6.16	-2.77	9.71	-1.47	12.05	-.94	14.22	-.58
	Clinic visits <sup>a/</sup>									
1,000..	.09	-2.98	.13	-1.45	.16	-.42	.17	.04	.16	.35
3,000..	.12	-2.14	.16	-.84	.17	.04	.17	.42	.15	.66
5,000..	.16	-1.38	.18	-.26	.17	.49	.15	.81	.13	.99

a/ Covered physicians' clinic visits include all covered physicians' ambulatory visits except office and home.

Chart 11. Demand for Physicians' Services: Clinic Visits at Family Incomes of \$1,000, \$3,000, and \$5,000



relationships demand eventually declines as coinsurance declines. But here it happens before coinsurance has declined very much.

From chart 11, it is evident that better-off aged persons, on the whole, regard a clinic visit as a highly inferior service. This is not true of poorer aged, until they acquire more coverage. (Note that, when all three curves are negatively inclined, the curve for the higher income level lies above the curve for the lower, that is, closer to the origin.)

The ratios in table 26 tell us that the ratio of clinic visits to office visits demanded will decline as the individual becomes better covered by insurance for ambulatory medical care. One substitutes office for clinic visits as the coinsurance rate declines. Income does not change this basic pattern.

When we examine the behavior of the clinic-office ratio, holding the coinsurance rate constant and varying family income levels, the ratio rises at low levels of coverage and declines at high levels. This is because at low levels of coverage clinic visits are the relatively "superior" good and at high levels of coverage the relatively "inferior" good. (Table 26 is derived directly from tables 24 and 25; one could reach this conclusion simply by studying them.) Perhaps this puzzling result is not very meaningful as the terms in income usually are not statistically significant.

Lastly, the deductible, which also has been shown to have a deterrent effect on utilization, would not have led us to characterize the clinic visit as an instance of a Giffen good; i.e., the demand for clinic visits has the familiar negative incline with respect to it. And the deductible, as it is lowered, is not associated with a decline in the ratio of clinic to office visits; the ratio barely changes, although it tends to rise.

#### F. Beneficiaries' Understanding of the Program

It is often asked whether a disproportionate number of SMI enrollees is "in ignorance" about the program. We do not

Table 26. Ratio of Clinic Visits to Office Visits,  
Both Expected Value Estimates, for Selected  
Ambulatory Care Coinsurance Rates and  
Family Incomes  
(In percent x 100)

Family income (\$)	Coinsurance rate				
	.18	.15	.12	.10	.08
	Clinic (RP6 and RP7)/Office (RP4) <u>a/</u>				
1,000.....	3.0	2.8	2.5	2.3	2.0
3,000.....	3.5	3.2	2.6	2.3	1.9
5,000.....	4.2	3.4	2.6	2.1	1.7
	Clinic (RP4)/Office (RP4)				
1,000.....	4.3	1.9	0.8	0.4	0.2
3,000.....	5.5	2.6	0.9	0.5	0.2
5,000.....	6.6	2.8	1.1	0.4	0.1

a/ RP4: Regional price, ambulatory physicians' visits.

RP6: Regional price, office visits.

RP7: Regional price, clinic visits.

For example, clinic (RP4) indicates that this was the only ambulatory regional price in the relation.

know. None of our findings bear on this question, at least not directly. On the other hand, there are too many reliable anecdotes for a researcher not to suspect that the program is indeed difficult for some enrollees to understand. If it is so, what might be the consequences of "ignorance" and where might they show up in the clearest fashion? Our guess is that "ignorance" would hamper an individual in using his entitlement fully to minimize out-of-pocket cost and maximize use of covered services, and that this would show up most clearly among persons living in rural areas, among Negroes, among those with less education, among the older aged, and among those with some welfare. As brought out in the preceding section, such statuses or designations do mean some manner of deterrence or friction with respect to both minimizing out-of-pocket expenses and maximizing utilization. (Welfare status: "some welfare" is a great exception to this generalization in connection with out-of-pocket cost minimization; it has a powerful tendency to reduce out-of-pocket cost.) However, all we can say in summary is that while these deterrents are probably more deep-seated than "ignorance" about the program, a complicated program surely will intensify them; although sample persons with such attributes would tend to realize fewer benefits even under the simplest regulations, the difference in benefits is widened by a program difficult to understand.

#### IV. THE EFFECT OF ALTERNATIVE METHODS OF REIMBURSEMENT ON UTILIZATION OF PHYSICIANS' SERVICES BY THE AGED

##### A. The Medicare Method of Reimburse- ment in Context; the Hypothesis

In its broadest sense, a method of reimbursement for costs of medical care includes the formula (legislative or contractual) describing the entitlements (the payments, the reimbursements and the conditions governing them), the rules by which they are administered, and the procedures for effectuating both. These may or may not be linked to characteristic modes of delivery of medical services. Most commonly they take the form of various methods of reimbursing individual physicians for services individually purchased and paid for on a fee-for-service basis; but they may include services purchased by an organized group of consumers from an organized group or staff of physicians and prepaid by uniform periodic payments irrespective of individual use.

In the former case, patients are reimbursed (or physicians are paid) part or all of the physicians' fees by an intermediary (or "third party") who, in turn, is reimbursed by regular per capita payments from the subscribers or their employers, or by payments from government for costs incurred. In the prepaid groups, the prepayments may be used to employ staff physicians (in which case there is no third party) or to reimburse individual physicians on a predetermined contractual basis.

The Medicare method of reimbursement is typical of the former kind. Enrollees in Medicare are free to use physicians of their choice and to claim reimbursement through a third-party "carrier" (Blue Cross/Blue Shield or an insurance carrier) for 80 percent of a reasonable fee for the service performed, after having first absorbed a nonreimbursable "deductible" of \$60 in any year (\$50 for the period covered by

this study). The patient is responsible for 20 percent of the reasonable fee, defined as the customary charge of the physician in question for the specified service or procedure but not in excess of the fee prevailing in the community. The patient is responsible for 100 percent of the amount by which the actual fee exceeds the charge allowed as reasonable.

The "customary and prevailing" test in some form is common but not universal among third-party carriers in their non-Medicare business. It is used by Blue Shield. Other carriers reimburse physicians according to a uniform schedule of dollar-and-cents fees, accepted as full payment, adjusted from time to time. Still others indemnify subscribers according to a schedule of benefits for specified services or a stated proportion of charges actually incurred.

For the purposes of this analysis, we hypothesize that the method of reimbursement (other things being equal) does not affect the extent of utilization of physicians' services or the composition of the services as among visits of patients to physicians' offices or to clinics or visits of physicians to patients at home or in hospital.

## B. The Hypothesis Tested

### 1. The Federal Employees Health Benefits Program 1961-68<sup>1/</sup>

Since 1961 the Federal Government has contributed a fixed amount per employee per month toward the cost of providing health benefits to its employees and annuitants and their dependents. Beneficiaries are permitted to choose among a variety of plans, with different methods of reimbursement. Five types of plans are offered:

- Blue Cross/Blue Shield
- Indemnity (Aetna Insurance)
- Employee organization (union)
- Comprehensive individual practice (fee schedules)
- Group practice

<sup>1/</sup> This section is drawn from The Federal Employees Health Benefits Program, by George S. Perrott, U.S. Department of Health, Education, and Welfare, May 1971.

The types of plans vary widely in costs and benefits. Of the eight selected for the Perrott study, the Blue Cross/Blue Shield and the indemnity plans included, as does Medicare, "coinsurance" (the portion of physicians' fees required to be paid by the patient); the others did not. (The widest variations in benefits were in the hospital benefits, which are not considered here.) The plans also varied in the delivery systems: all but the group practice plans were characterized by the conventional modes of doctor-patient relationship; whereas the group practice plans through their staff physicians exercised a considerable degree of "medical management," with internal control of referrals and consultations and hospitalization only on the initiative of the staff physicians. On the other hand, in both group and individual practice plans, once the prepayment is made, the patient has access to physicians with no financial constraint.

The differences in utilization are striking, both in the proportions of persons receiving services and in the services they receive.

Type of plan	Percent of covered persons receiving nonmaternity benefits	
	Any benefit	Inpatient hospital
Blue Cross/Blue Shield..	33.2	9.9
Indemnity.....	26.1	9.0
Employee organization...	31.2	8.9
Group practice.....	80.6	4.9
Individual practice.....	75.7	6.6

Source: Perrott, op. cit., p. 9.

The group and individual practice plans were much more freely utilized, and hospitalization rates were much lower. In every age class, nonmaternity hospital admissions per 1,000 persons were only about half as many in the Washington, D.C., group practice as in Blue Cross/Blue Shield, though days of hospitalization per admission were nearly the same.<sup>1/</sup> Among Federal annuitants, the days of hospitalization per 1,000 persons in 1968 were twice as great in Blue Cross/Blue Shield plans as in group practice plans, with indemnity plans falling

<sup>1/</sup> Ibid., p. 15.

in between.<sup>1/</sup> Surgical procedures were relatively more than twice as numerous in Blue Cross/Blue Shield as in group practice.<sup>2/</sup>

Differences over time were equally striking. Between 1961 and 1968, the percent of Blue Cross/Blue Shield enrollees receiving outpatient or out-of-hospital benefits tripled, from 7 to 22 percent, and that of the indemnity plan nearly doubled, from 9 to 16 percent; whereas the group practice and individual practice plans fluctuated within a range in the neighborhood of 70 to 80 percent.<sup>3/</sup>

We are seeing here the effects of more than "method of reimbursement" alone. The five types of plans vary in cost (in 1971, from a median family premium of \$40 a month for employee organization plans to \$48 for the Blue Cross/Blue Shield and \$53 for the indemnity plans) as well as in the scope and level of benefits, and in the mode of delivery implicit in the several plans. The fact that in group practice plans there was no charge for seeing a physician, and in the individual practice plans either a nominal charge or none, is a characteristic both of the method of reimbursement and of the mode of delivery and patient-doctor relationships. Thus, this body of data tends to refute the hypothesis that the method of reimbursement does not affect the level and mix of utilization of physicians' services; but in the light of differences in population covered and in delivery systems, the evidence is not conclusive. It should be noted that insofar as adverse selection might be a factor, one would expect the poor risks to opt for the plans with the most extensive benefits, and that the utilization rates would be higher among group and individual practice plans. This was indeed the case for physicians' services, but not for hospitalization.

## 2. "Before and After" Medicare

### a. 1965 and 1967 Compared

In a study to determine the effects of Medicare, Professor Regina Loewenstein of Columbia University compared the

<sup>1/</sup> Ibid., p. 17.

<sup>2/</sup> Ibid., p. 19.

<sup>3/</sup> Ibid., table 7.

experience of persons 65 years and over in utilization of medical care in 1965 and 1967.<sup>1/</sup> Samples of old-age and survivors insurance (OASI) beneficiaries aged 65 and over were interviewed early in 1966, and in late 1967 a sample from a comparable universe was interviewed. "No significant changes were found in the proportion of persons with ambulatory visits, and a slight decrease was noted in the number of reported visits per person."<sup>2/</sup> There was, however, a shift from clinic and home visits to office visits, representing a "normalization" of the mode of delivery among the low-income elderly who (once the financial barrier was lowered) adopted the usual mode, i.e., visits to a physician's office, rather than a "free" clinic. On the other hand, she found that beneficiaries' "out-of-pocket expenses for medical services [physicians' services in and out of hospital] decreased from 81 percent to 47 percent of the total charges, reflecting the 45 percent covered by Medicare."

The proportion of persons 65 years and over who received ambulatory medical care during 1967 was virtually unchanged from 1965, and the average number of visits per person were a little lower in 1967. These results are consistent with the findings of the National Health Survey for 1964 and 1967 (tables 27 and 28). However, the increase in the number of stays in short-term hospitals as the result of Medicare Part A (hospitalization insurance) caused increases in physicians' services to Medicare beneficiaries in hospital.

The Columbia results for 1967 (an average of 5.7 ambulatory physicians' visits) correspond rather closely to those from the Current Medicare Survey of Social Security, derived from direct inquiry of a national sample of Medicare enrollees, which reported an average of 5.5 physicians' visits (excluding in-hospital visits) in 1967 (table 29).

#### b. National and HIP Experience Compared

The Health Insurance Plan of Greater New York (HIP) is a prepaid group practice plan, with the delivery system and

<sup>1/</sup> Regina Loewenstein, "Early Effects of Medicare on the Health Care of the Aged," Social Security Bulletin, April 1971.

<sup>2/</sup> Ibid., p. 4.

Table 27. Per Capita Number of Ambulatory Physician Visits of Those 65 or Older in the United States, National Health Survey,<sup>a/</sup> Selected Years

Place of visit <sup>b/</sup>	Per capita number of physician visits		
	1964	1967	1969
Home.....	n.a.	0.6	n.a.
Ambulatory.....	6.2 (6.7)	5.5 (6.0)	5.6 (6.1)
Home/ambulatory (in percent).....		11	

a/ Definitions and explanations:

1. Physician visit: A physician visit is defined as consultation with a physician, in person or by telephone for examination, diagnosis, treatment, or advice. The visit is considered to be a physician visit if the service is provided directly by the physician or by a nurse or other person acting under a physician's supervision. For the purpose of this definition "physician" includes doctors of medicine and osteopathic physicians. The term "doctor" is used in the interview, rather than "physician," because of the need to keep to popular usage. However, the concept toward which all instructions are directed is that which is described here.

Physician visits for services provided on a mass basis are not included in the tabulations. A service received on a mass basis is defined as any service involving only a single test (e.g., test for diabetes) or a single procedure (e.g., smallpox vaccination) when this single service was administered identically to all persons who were at the place for this purpose. Hence, persons passing through a tuberculosis chest X-ray trailer, by this definition, are not included as physician visits. However, a special chest X-ray given in a physician's office or an outpatient clinic is considered a physician visit.

Physician visits to hospital inpatients are not included.

If a physician is called to the house to see more than one person, the call is considered a separate physician visit for each person about whom the physician was consulted.

A physician visit is associated with the person about whom the advice was sought, even if that person did not actually see or consult the physician. For example, if a mother consults a physician about one of her children, the physician visit is ascribed to the child.

2. Place of visit: The place of visit is a classification of the types of places at which a physician visit took place. The definitions of the various categories are as follows:

a. Home is defined as any place in which the person was staying at the time of the physician's visit. It may be his own home, the home of a friend, a hotel, or any other place the person may be staying (except as an overnight patient in a hospital).

continued--

Table 27. continued--

b. Office is defined as the office of a physician in private practice only. This may be an office in the physician's home, an individual office in an office building, or a suite of offices occupied by several physicians. For purposes of this survey, physicians connected with prepayment group practice plans are considered to be in private practice.

c. Hospital clinic is defined as an outpatient clinic or emergency room in any hospital.

d. Telephone contact refers to advice given in a telephone call directly by the physician or transmitted through the nurse (calls for appointments are excluded).

e. Other refers to advice or treatment received from a physician or under a physician's general supervision at a school, at an insurance office, at a health department clinic, or any other place at which a physician consultation might take place.

f. The place of visit was assigned on the basis of the response to the question: "Where did -- see the doctor on (date)?" If the response was, for example, doctor's office, the visit was so classified. If the reply included the volunteered comment that the doctor's office was located in a prepaid insurance group clinic, prepaid insurance group (a subclass of doctor's office) was the assigned place of visit.

3. Except for telephone visits, the NHS definition of ambulatory physician visits is comparable to the CMS definition.

4. For the age group of 65 and over, such consultations accounted for 8.2, 7.8 and 8.8 percent of ambulatory physician visits in 1964, 1967 and 1969, respectively. We applied these specific rates to arrive at estimates of ambulatory physician visits exclusive of telephone calls. The estimates of ambulatory physician visits inclusive of telephone calls are shown in parentheses in the above table.

b/ Figures for in-hospital physician visits are not available.

Source: See Public Health Service, National Center for Health Statistics, National Health Survey, Volume of Physician Visits by Place of Visit and Type of Service, U.S., July 1963-64 (series 10 No. 18) -- 1964, and Volume of Physician Visits U.S., July 1966-67 (series 10, No. 49) -- 1967. Current Estimates from the Health Interview Survey U.S. - 1969 (series 10, No. 63) -- 1969.

Table 28. Per Capita Number of Ambulatory Physician Visits of Those 65 or Older in the United States, Columbia University Study,<sup>a/</sup> Selected Years

Place of visit <sup>b/</sup>	Per capita number of physician visits	
	1965	1967
Home.....	0.8	0.5
Ambulatory.....	5.9	5.7
Home/ambulatory (in percent)...	14	9

a/ Definitions and explanations:

1. Ambulatory medical visit: Visit by or to a doctor at home, or in office, (clinic, emergency room, health center) or private laboratory. Includes care by nurse and laboratory technician in office, clinic, etc.

a. Private physician. Medical doctor and osteopath in private practice, including a doctor with own office, with office in medical center, on staff of prepaid center, and in private group practice. Includes care by nurse or technician on staff of a private doctor or group.

b. Home visit. Visit by private medical doctor to patient's home. Includes visit to institution not classified as extended-care facility or nursing home.

c. Office visit. Visit to private doctor in office, health center, or group practice. Includes emergency care by private doctor in emergency room of hospital.

d. Clinic. Outpatient department and emergency room of a hospital, clinic of a health department, clinic of an agency, Veterans Administration clinic, industrial clinic, mobile unit, and health center not known to be a prepaid center or group practice.

2. Ambulatory physician visits: Include private physicians' home and office visits. According to the definition of the study that visit to a clinic, emergency room, and health center is not a physician visit. It is hereby excluded from ambulatory physician visits and this definition of ambulatory visit should be comparable with that of CMS.

b/ Figures for in-hospital physician visits are not available.

Source: Regina Loewenstein, "Early Effects of Medicare on the Health Care of the Aged," Social Security Bulletin, April 1971, p. 13.

Table 29. Per Capita Number of Ambulatory Physician Visits and In-Hospital Physician Visits of Those 65 or Older in the United States, Current Medicare Survey,<sup>a/</sup> Selected Years

Place of visit	Per capita number of physician visits			
	1967	1968	1969	1970
Home.....	0.5	0.6	0.5	0.5
Ambulatory.....	5.5	5.4	5.4	5.4
In-hospital.....	n.a.	n.a.	5.5	n.a.
Home/ambulatory (in percent)....	9	11	9	9

a/ Definitions and explanations:

1. Medical insurance sample: A sample of about 1 out of 4,000 persons enrolled in the supplementary medical insurance program for the aged, representing the 50 states and the District of Columbia.

2. Medical services: The survey includes covered services, prescription drugs, other selected noncovered services, and medical services for which no bill is expected.

3. Covered services: Types of services covered under the SMI program, but excluding services provided to hospital in-patients by radiologists and pathologists.

4. Place of visit: The survey classifies medical visits as occurring at home, in an office, in the hospital (which may also be a psychiatric or tuberculosis institution), in an outpatient facility (clinic, rehabilitation, or public health agency) or in a nursing home, (including extended-care facility, rest or convalescent home, or institution providing custodial care).

5. Surgical services: Medical care provided by surgeons and anesthesiologists to the patient hospitalized for surgery. However, surgical visits include only those surgical and anesthetic services which occur during the hospital stay and within the month surgery is performed.

6. Ambulatory physician visits: Include covered office, home and outpatient physician visits.

7. In-hospital physician visits: Include covered hospital nonsurgical and surgical visits.

Source: See Howard West, "Five Years of Medicare-A Statistical Review," Social Security Bulletin, December 1971, p. 25 table 10 -- for 1967, 1968 and 1970.

See Gretchen Y. Wolfe, "Current Medicare Survey Report," Health Insurance Statistics, Social Security Administration, Office of Research and Statistics, July 1971, p. 12, table 4 -- for 1969.

methods of payment characteristic of these organizations. The record of physicians' visits per capita per annum for HIP subscribers 65 years and over, 1955-70, shows a level of utilization of ambulatory services comparable to those reported in Loewenstein and the National Health Survey (6, more or less) throughout the period (table 30). There has been a slow and irregular tendency toward an increase in visits to doctors and a slow decline in home visits. Nor is there any evidence of change between the years immediately before and those immediately after the HIP subscribers 65 years and over were covered by Medicare. The inference is that the delivery system and the associated method of reimbursement of this group practice plan determined the utilization rates, unaffected by the source of the financing (Medicare or other).

### c. HIP and GHI, 1964

For one pre-Medicare year we can compare the utilization rates of HIP with a prepaid individual practice plan, Group Health Insurance Inc. of New York. In this comparison the methods of reimbursement are similar -- prepaid through monthly premiums with no charge for visits -- but the delivery systems are different: HIP through groups of physicians; GHI through individual practitioners according to a schedule of fees accepted as full payment for services. In the one pre-Medicare year for which GHI data are available (see table 31), visits per capita for subscribers 65 years and over are somewhat higher in all categories (ambulatory, home and in-hospital) for GHI subscribers than for HIP. The difference is most marked for in-hospital visits. Such differences between group practice and individual practice plans are commonly observed and are attributed to more rigorous "medical management" in the groups. Whether they indicate "rationed" underutilization by the group or a tendency to overutilization by the individual practice plans has not been established.

Source	Amb. (inc. home) visits per person 65 yrs. and over		
	1964	1967	1969
National Health Survey.....	6.2	5.5	5.6
Health Insurance Plan, N.Y...	6.4	6.3 <sup>a/</sup>	6.3 <sup>b/</sup>
Group Health Insurance, N.Y..	6.6	--	--
Before-and-After Medicare....	5.9 <sup>c/</sup>	5.7	--
Current Medicare Survey.....	--	5.5	5.4

a/ 1968.

b/ 1970.

c/ 1965.

Table 30. Per Capita Number of Ambulatory Physician Visits and In-Hospital Physician Visits of Those 65 or Older in the Health Insurance Plan of Greater New York, a/ 1955-66, 1968, 1970

Place of visit	Per capita number of physician visits													
	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1968	1970
Home.....	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2
Ambulatory.....	5.9	5.7	5.6	5.6	5.5	5.6	6.0	6.6	6.3	6.4	6.4	6.7	6.3	6.3
In-hospital....	1.4	1.6	1.1	1.2	1.4	1.5	1.3	1.7	1.4	1.6	1.8	1.7	1.6	1.5
Home/ambulatory (in percent)..	8	7	7	7	7	5	5	5	5	3	3	3	3	3

a/ Definitions and explanations:

1. Physician Services: In general, data on physician services refer to the number of face to face contacts that H.I.P. physicians have with enrollees either at their offices, at the patients' homes, at the hospital, or at the group center. Two doctors in consultation with one patient at one time constitute two services. Similarly, if two doctors attend a patient for surgery, both get credit for a physician visit. However, only one service is classified as a surgical procedure.

A radiologist service is defined as a patient contact with the radiology department on a single day. If an enrollee makes several visits to the radiologist's office on the same day, this is considered to be only one patient visit.

In the case of cardiologist and internist service, each electrocardiogram study is considered a separate physician service whether or not the cardiologist or internist rendered any other service to the patient.

2. Measures of Physician Utilization, Annual Utilization Rates: These rates are obtained by relating the number of services received from H.I.P. physicians during the year to the average number of enrollees in H.I.P. Thus the utilization rate is expressed as the average number of services per person per year. These rates are based on two different types of tabulations:

a. Manual counts of services are summarized from the physician's report form (Med. 10). These provide data on a 100 percent basis for H.I.P. and each medical group by physician specialty and place of service. Rates are based on the average monthly enrollment. The average monthly enrollment is obtained by dividing the total number of person months of coverage in a year by twelve. This, in effect, takes account of the fact that some enrollees are in H.I.P. for only part of the year.

Table 30. continued--

b. The experience of a 10 percent sample of the H.I.P. population is tabulated mechanically. Subscribers and their dependents with certificate numbers having a randomly selected terminal digit constitute the sample of persons. Counts of physician services rendered to these individuals are used in calculating utilization rates by age and sex. Rates are based on a 10 percent sample of the H.I.P. mid-year population. For 1970 this figure is 747,147 which is very close to the average monthly enrollment total of 746,233.

3. All the figures are based on a 10 percent sample of H.I.P. population.

4. Physician services excludes pathologist.

5. It is assumed that the physician visits at the group center are included with office visits and that all physician service at the hospital are inpatient hospital physician visits.

6. For 1968 and 1970, per capita figures are for persons 65 or older living in their own home, persons 65 or older living in nursing homes are excluded from the calculation.

7. This ambulatory physician visits should be comparable with that of CMS.

Source: H.I.P., Statistical Reports, 1955-66, 1968, 1970.

Table 31. Per Capita Number of Ambulatory Physician Visits and In-Hospital Physician Visits of Those 65 or Older in Group Health Insurance Inc.,<sup>a/</sup> 1964

Place of visit	Per capita number of physicians visits, 1964
Home.....	0.7
Ambulatory.....	6.6
In-hospital....	2.7
Home/ambulatory (in percent)..<	11

a/ Definitions and explanations:

1. Converting claims to services: The unit of measurement in insurance records is the claim. The unit of measurement in medical care reporting is the service (or contact or visit). In order to calculate the total number of units of care received, as well as to maximize comparability with other types of source data, it was necessary to adopt a common unit of measurement for conversion of insurance data to medical data.

This problem was partially solved by counting each physician-patient contact and each laboratory test as a unit of service, regardless of number of claims involved. In many instances, however, the number of physician contacts is unknown. One claim will suffice per surgical procedure, per maternity case, per hospital case; for insurance purposes these are considered and paid for as single services. But since they involve multiple physician contacts, they cannot be equated with, say, single office visits, in a count of total medical services. Assignment of more appropriate weights to these services requires assumptions, sometimes arbitrary, as to probable average numbers of physician services actually rendered.

2. Calculations of volume of physician and laboratory services were based on the following guidelines:

a. One physician service was counted for each office call or home call.

b. One physician service was counted for each day of hospitalization. (In this case, "hospital day" includes both entry and discharge dates, since GHI includes both in calculating physician payments for medical admissions. For purposes of hospitalization studies, however, data were adjusted to exclude the extra day, to conform with methods of hospitalization reimbursement.)

c. For each hospital surgical admission, two office visits were assumed to have been included for the surgical fee; office surgery was assumed to involve an average of one extra office visit; obstetrical cases were assumed to involve eleven pre- and postnatal office visits except for abortions or miscarriages, where five such visits were assumed.

d. Diagnostic X-rays were classified as physician services on the assumption that interpretations were by physicians.

Table 31. continued--

d. One laboratory service was counted for each procedure paid for by GHI, which means routine urinalyses and hemoglobin tests, as well as all hospital tests, were excluded.

3. Ambulatory physician visit includes general office visits. Consultations, preventive visits, ambulatory surgery, diagnostic X-rays, radiotherapy and home visits. The first six kinds of services should be comparable to what are termed office visits in the surveys or other plans.

4. GHI is an example of an individual practice plan where services are provided through participating physicians practicing in their own offices and accepting fees set by the plans as full payment. Hospitalization may be provided through self-insurance or use of an insurance plan, such as Blue Cross or commercial insurance.

Source: Helen H. Avnet, "Physician Service Patterns and Illness Rate," GHI, 1967, pp. 47-48, 114-15, tables 46 and 47.

#### d. Conclusions

The evidence does perhaps suggest that Medicare Part B and this method of reimbursement have tended to change the composition of services demanded by the aged, inducing a substitution of insured visits in-hospital for ambulatory medical care. The National Health Survey, reflecting conventional fee-for-service medicine, shows a decline from 1964 to 1967 and no change from 1967 to 1969. The Columbia before-and-after Medicare study shows a slight decline from 1965 to 1967. Both are in the same range in 1967 as the Current Medicare Survey results. HIP, with a distinctly different method of reimbursement and method of delivery of care, recorded about the same number of ambulatory physicians' visits per aged person over the 1964-69 period.

ANNEX. SUPPLEMENTARY TABLES  
AND CHARTS

## LIST OF SUPPLEMENTARY TABLES

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Ambulatory Visits
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7. Frequency and Distribution of  $K_1$  (Ambulatory Medical-Care Visits Coinsurance Rate) and  $K_2$  (In-Hospital Medical Care Visits Coinsurance Rate), Restricted Sample
8. Frequency and Distribution of the Carryover Basis of the Deductible, Total Sample
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11. Frequency and Distribution of RP4 (Regional Price of Ambulatory Physicians' Visits), Total Sample
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15. Frequency and Distribution of the Regional Assignment Rate, Restricted Sample

## LIST OF SUPPLEMENTARY CHARTS

1. Relative Frequency of  $K_1$
2. Relative Distribution of  $K_1$
3. Relative Frequency of  $K_2$
4. Relative Distribution of  $K_2$
5. Relative Frequency of Carryover
6. Relative Distribution of Carryover
7. Relative Frequency of Family Income, Restricted Sample, Income Known
8. Relative Distribution of Family Income, Restricted Sample, Income Known
9. Relative Frequency of Family Income, Total Sample, Income Known
10. Relative Distribution of Family Income, Total Sample, Income Known

Supplementary table 1. Demand for Physicians' Services by the Aged: Ambulatory Visits

Independent variables	Coefficients	Standard errors
Constant term.....	$-0.3770 \times 10^3^*$	$0.1746 \times 10^3$
Hospital stay:		
No.....		
Yes.....	$.5675 \times 10^{1*}$	$.3993 \times 10^0$
Census region and size of place:		
Northeast urban.....		
Northeast rural.....	$-.2359 \times 10^{1*}$	$.1005 \times 10^1$
North Central urban.....	$-.8906 \times 10^0$	$.7481 \times 10^0$
North Central rural.....	$-.1640 \times 10^{1+}$	$.1015 \times 10^1$
West urban.....	$-.1042 \times 10^{1*}$	$.1007 \times 10^1$
West rural.....	$-.2866 \times 10^0$	$.1425 \times 10^1$
South urban.....	$-.4816 \times 10^0$	$.1277 \times 10^1$
South rural.....	$-.2567 \times 10^{-1}$	$.2793 \times 10^1$
Living arrangement:		
In institution.....		
Not in institution.....	$.1149 \times 10^{2*}$	$.9240 \times 10^0$
Household size:		
One person.....		
Two or more persons.....	$-.3558 \times 10^0$	$.8131 \times 10^0$
Unknown.....	$-.7257 \times 10^{-1}$	$.4738 \times 10^1$
Race:		
White.....		
Negro.....	$-.1961 \times 10^{1*}$	$.9277 \times 10^0$
All other and unknown.....	$-.5965 \times 10^{1*}$	$.2867 \times 10^1$
Marital status:		
Married.....		
Nonmarried.....	$.2277 \times 10^0$	$.5011 \times 10^0$
Unknown.....	$-.5799 \times 10^{-1}$	$.2056 \times 10^1$
Education:		
Less than 9 years.....		
9 years or more.....	$.1404 \times 10^0$	$.1326 \times 10^1$
Unknown.....	$-.2573 \times 10^{1s}$	$.1440 \times 10^1$
Health limitations:		
Confined to bed or house.....		
Other limitations.....	$-.8813 \times 10^0$	$.8614 \times 10^0$
No limitations.....	$.7824 \times 10^{-1}$	$.7194 \times 10^0$
Deceased.....	$.1029 \times 10^1$	$.1912 \times 10^1$
Unknown.....	$-.1031 \times 10^1$	$.3683 \times 10^1$
Health evaluation:		
Better than that of others.....		
Same as that of others.....	$.2019 \times 10^{1*}$	$.3739 \times 10^0$
Worse than that of others.....	$.4840 \times 10^{1*}$	$.7914 \times 10^0$

continued--

Table 1. continued--

Independent variables	Coefficients	Standard errors
Work status:		
No work.....		
Some work.....	$-.6113 \times 10^0$	$.7800 \times 10^0$
Unknown.....	$-.6342 \times 10^0$	$.1361 \times 10^1$
Age:		
65-69.....		
70-74.....	$-.3119 \times 10^0$	$.4805 \times 10^0$
75 and over.....	$-.4568 \times 10^0$	$.5323 \times 10^0$
Sex:		
Male.....		
Female.....	$.9352 \times 10^{0*}$	$.4009 \times 10^0$
Welfare status:		
Some welfare.....		
No welfare.....	$.1698 \times 10^1$	$.1428 \times 10^2$
1.0 minus coinsurance rate, ambulatory visits: C1.....	$.9863 \times 10^{3*}$	$.3105 \times 10^3$
1.0 minus coinsurance rate, in-hospital visits: C2.....	$.1922 \times 10^3$	$.2511 \times 10^3$
Regional price, ambulatory visits: RP4.....	$.4540 \times 10^1$	$.4060 \times 10^1$
Regional price, in-hospital visits: RP8.....	$-.1969 \times 10^{1*}$	$.7025 \times 10^0$
Regional assignment rate.....	$-.5047 \times 10^{-1\dagger}$	$.3323 \times 10^{-1}$
Income.....	$.4082 \times 10^{-2}$	$.4049 \times 10^{-2}$
Income known status:		
Known.....		
Unknown.....	$.3775 \times 10^{-2}$	$.3992 \times 10^{-2}$
Deductible D.....	$.5480 \times 10^{0*}$	$.2528 \times 10^0$
C1 squared.....	$-.5784 \times 10^{3*}$	$.1836 \times 10^3$
C2 squared.....	$.2721 \times 10^2$	$.1520 \times 10^3$
RP4 squared.....	$-.3556 \times 10^{0*}$	$.1723 \times 10^0$
RP8 squared.....	$.1635 \times 10^{-1*}$	$.5496 \times 10^{-2}$
Income squared.....	$-.3205 \times 10^{-7}$	$.5773 \times 10^{-7}$
D squared.....	$-.2795 \times 10^{-2*}$	$.1009 \times 10^{-2}$
C1 times C2.....	$.1027 \times 10^3$	$.1507 \times 10^3$
C1 times RP4.....	$.2162 \times 10^1$	$.2953 \times 10^1$
C1 times income.....	$-.7492 \times 10^{-2*}$	$.4680 \times 10^{-2}$
C1 times income known status....	$-.3211 \times 10^2$	$.4326 \times 10^2$
C1 times D.....	$-.1543 \times 10^0$	$.2479 \times 10^0$
C2 times RP8.....	$.1365 \times 10^{1*}$	$.6571 \times 10^0$
C2 times income.....	$.4093 \times 10^{-2}$	$.2242 \times 10^{-2}$
C2 times income known status....	$-.6130 \times 10^1$	$.1696 \times 10^2$
C2 times D.....	$-.2826 \times 10^0$	$.2597 \times 10^0$

continued--

Table 1. continued--

Independent variable	Coefficients	Standard error
RP4 times D.....	$-.8393 \times 10^{-2}$	$.1290 \times 10^{-1}$
RP8 times D.....	$.2044 \times 10^{-2}$	$.2695 \times 10^{-2}$
Income times D.....	$-.6699 \times 10^{-6}$	$.3898 \times 10^{-5}$
Income times welfare status.....	$-.8176 \times 10^{-3}$	$.1260 \times 10^{-2}$
Income known status times D.....	$.1024 \times 10^{-1}$	$.3506 \times 10^{-1}$
Income known status times welfare status.....	$-.4241 \times 10^1$	$.8964 \times 10^1$
Income squared times welfare status.....	$.7543 \times 10^{-8}$	$.7004 \times 10^{-7}$
Sigma.....	$.9002 \times 10^1$	
Log of likelihood function.....	$-.1147 \times 10^5$	
	Number	Percent
Distribution of observations....	3954	100
Limits.....	989	25
Nonlimits.....	2965	75

\* Denotes coefficient significant at higher than 95 percent confidence level 1.960.

† Denotes coefficient significant at 90-80 percent confidence level 1.282.

§ Denotes coefficient significant at 95-90 percent confidence level 1.645.

Supplementary table 2. Demand for Physicians' Services by  
the Aged: Ambulatory Charges

Independent variables	Coefficients	Standard errors
Constant term.....	$-0.2913 \times 10^4^*$	$.1926 \times 10^4$
Hospital stay:		
No.....		
Yes.....	$.5628 \times 10^{2+}$	$.4408 \times 10^{--1}$
Census region and size of place:		
Northeast urban.....		
Northeast rural.....	$-.3345 \times 10^{2+}$	$.1110 \times 10^{--2}$
North Central urban.....	$-.1387 \times 10^{2s}$	$.8245 \times 10^{--1}$
North Central rural.....	$-.2298 \times 10^{2+}$	$.1122 \times 10^{--2}$
West urban.....	$-.1282 \times 10^{--2}$	$.1120 \times 10^{--2}$
West rural.....	$-.3582 \times 10^{2+}$	$.1567 \times 10^{--2}$
South urban.....	$.1989 \times 10^{--1}$	$.1409 \times 10^{--2}$
South rural.....	$-.8015 \times 10^{--1}$	$.3082 \times 10^{--2}$
Living arrangement:		
In institution.....		
Not in institution.....	$.1270 \times 10^{3+}$	$.1022 \times 10^{--2}$
Household size:		
One person.....		
Two or more persons.....	$-.7220 \times 10^{--1}$	$.8977 \times 10^{--1}$
Unknown.....	$-.5115 \times 10^{--1}$	$.5192 \times 10^{--2}$
Race:		
White.....		
Negro.....	$-.2377 \times 10^{2+}$	$.1025 \times 10^{--2}$
All other and unknown.....	$-.6251 \times 10^{2+}$	$.3143 \times 10^{--2}$
Marital status:		
Married.....		
Nonmarried.....	$.9429 \times 10^{--0}$	$.5543 \times 10^{--1}$
Unknown.....	$-.1761 \times 10^{--2}$	$.2319 \times 10^{--2}$
Education:		
Less than 9 years.....		
9 years or more.....	$.5716 \times 10^{--1}$	$.1463 \times 10^{--2}$
Unknown.....	$-.3378 \times 10^{2+}$	$.1595 \times 10^{--2}$
Health limitations:		
Confined to bed or house.....		
Other limitations.....	$-.1266 \times 10^{2+}$	$.9532 \times 10^{--1}$
No limitations.....	$-.6763 \times 10^{--1}$	$.7980 \times 10^{--2}$
Deceased.....	$.1343 \times 10^{--2}$	$.2105 \times 10^{--2}$
Unknown.....	$.1505 \times 10^{--2}$	$.4018 \times 10^{--2}$
Health evaluation:		
Better than that of others.....		
Same as that of others.....	$.2107 \times 10^{2+}$	$.4132 \times 10^{--1}$
Worse than that of others.....	$.4973 \times 10^{2+}$	$.8754 \times 10^{--1}$

continued--

Table 2. continued--

Independent variables	Coefficients	Standard errors
Work status:		
No work.....	$-.4501 \times 10^{-1}$	$.8599 \times 10^{-1}$
Some work.....	$-.1058 \times 10^{-2}$	$.1495 \times 10^{-2}$
Unknown.....		
Age:		
65-69.....	$-.4844 \times 10^{-0}$	$.5311 \times 10^{-1}$
70-74.....	$-.5025 \times 10^{-1}$	$.5878 \times 10^{-1}$
75 and over.....		
Sex:		
Male.....	$.1150 \times 10^{-2+}$	$.4440 \times 10^{-1}$
Female.....		
Welfare status:		
Some welfare.....	$.2899 \times 10^{-2}$	$.1576 \times 10^{-3}$
No welfare.....		
1.0 minus coinsurance rate, ambulatory visits: C1.....	$.8584 \times 10^{-4+}$	$.3418 \times 10^{-4}$
1.0 minus coinsurance rate, in-hospital visits: C2.....	$-.2376 \times 10^{-4}$	$.2766 \times 10^{-4}$
Regional price, ambulatory visits: RP4.....	$.4537 \times 10^{-1}$	$.4523 \times 10^{-2}$
Regional price, in-hospital visits: RP8.....	$-.9163 \times 10^{-1}$	$.7746 \times 10^{-1}$
Regional assignment rate.....	$-.5533 \times 10^{-0*}$	$.3672 \times 10^{-0}$
Income.....	$.4129 \times 10^{-1}$	$.4466 \times 10^{-1}$
Income known status:		
Known.....		
Unknown.....	$.6015 \times 10^{-3*}$	$.4399 \times 10^{-3}$
Deductible D.....	$.2243 \times 10^{-1}$	$.2922 \times 10^{-1}$
C1 squared.....	$-.5054 \times 10^{-4+}$	$.2032 \times 10^{-4}$
C2 squared.....	$.6462 \times 10^{-3}$	$.1691 \times 10^{-1}$
RP4 squared.....	$-.2476 \times 10^{-1*}$	$.1901 \times 10^{-1}$
RP8 squared.....	$.1517 \times 10^{-0+}$	$.6068 \times 10^{-1}$
Income squared.....	$-.3041 \times 10^{-7}$	$.6352 \times 10^{-6}$
D squared.....	$-.1865 \times 10^{-1*}$	$.1154 \times 10^{-1}$
C1 times C2.....	$.8772 \times 10^{-3}$	$.1712 \times 10^{-4}$
C1 times RP4.....	$.3691 \times 10^{-2}$	$.3302 \times 10^{-2}$
C1 times income.....	$-.8122 \times 10^{-1*}$	$.5159 \times 10^{-1}$
C1 times income known status....	$-.7165 \times 10^{-3*}$	$.4472 \times 10^{-3}$
C1 times D.....	$-.8148 \times 10^{-0}$	$.2915 \times 10^{-1}$
C2 times RP8.....	$.5553 \times 10^{-1}$	$.7241 \times 10^{-1}$
C2 times income.....	$.4575 \times 10^{-1\$}$	$.2465 \times 10^{-1}$
C2 times income known status....	$.1041 \times 10^{-3}$	$.1875 \times 10^{-3}$
C2 times D.....	$-.1387 \times 10^{-1}$	$.2910 \times 10^{-1}$

continued--

Table 2. continued--

Independent variables	Coefficients	Standard errors
RP4 times D.....	.5230 x 10 <sup>-1</sup>	.1461 x 10 <sup>0</sup>
RP8 times D.....	.3568 x 10 <sup>-2</sup>	.2993 x 10 <sup>-1</sup>
Income times D.....	-.2403 x 10 <sup>-4</sup>	.4629 x 10 <sup>-4</sup>
Income times welfare status.....	-.6844 x 10 <sup>-2</sup>	.1390 x 10 <sup>-1</sup>
Income known status times D.....	-.6100 x 10 <sup>-1</sup>	.4090 x 10 <sup>0</sup>
Income known status times welfare status.....	-.6150 x 10 <sup>2</sup>	.9893 x 10 <sup>2</sup>
Income squared times welfare status.....	-.1063 x 10 <sup>-6</sup>	.7718 x 10 <sup>-6</sup>
Sigma.....	.9858 x 10 <sup>2</sup>	
Log of likelihood function.....	-.1822 x 10 <sup>5</sup>	
	Number	Percent
Distribution of observations....	3900	100
Limits.....	989	25
Nonlimits.....	2911	75

\* Denotes coefficient significant at 90-80 percent confidence level 1.282.

† Denotes coefficient significant at higher than 95 percent confidence level 1.960.

§ Denotes coefficient significant at 95-90 percent confidence level 1.645.

Supplementary table 3. Demand for Complementary Insurance  
by the Aged: Ambulatory Visits

Independent variables	Coefficients	Standard errors
Constant term.....	$0.1746 \times 10^0$	$0.7279 \times 10^{-1}$
Census region and size of place:		
Northeast urban.....	$-.1200 \times 10^{-1}$	$.1030 \times 10^{-1}$
Northeast rural.....	$.9855 \times 10^{-2*}$	$.7044 \times 10^{-2}$
North Central urban.....	$.1447 \times 10^{-1*}$	$.9316 \times 10^{-2}$
North Central rural.....	$.1574 \times 10^{-3}$	$.6876 \times 10^{-2}$
West urban.....	$-.3144 \times 10^{-2}$	$.1687 \times 10^{-1}$
West rural.....	$.2183 \times 10^{-1+}$	$.7515 \times 10^{-2}$
South urban.....	$.5732 \times 10^{-1+}$	$.9583 \times 10^{-2}$
South rural.....		
Household size:		
One person.....	$.1394 \times 10^{-1+}$	$.6159 \times 10^{-2}$
Two or more persons.....	$-.5162 \times 10^{-1*}$	$.3259 \times 10^{-1}$
Unknown.....		
Race:		
White.....	$.8615 \times 10^{-2}$	$.8515 \times 10^{-2}$
Negro.....	$.3036 \times 10^{-1}$	$.3562 \times 10^{-1}$
All other and unknown.....		
Marital status:		
Married.....	$.5696 \times 10^{-2}$	$.5840 \times 10^{-2}$
Nonmarried.....	$.4106 \times 10^{-2}$	$.2986 \times 10^{-1}$
Unknown.....		
Education:		
Less than 9 years.....	$-.2764 \times 10^{-1+}$	$.4550 \times 10^{-2}$
9 years or more.....	$-.2265 \times 10^{-1\$}$	$.1242 \times 10^{-1}$
Unknown.....		
Health evaluation:		
Better than that of others...	$-.2711 \times 10^{-2}$	$.4600 \times 10^{-2}$
Same as that of others.....	$-.1208 \times 10^{-1\$}$	$.6560 \times 10^{-2}$
Worse than that of others....		
Work status:		
No work.....	$-.1335 \times 10^{-1}$	$.5866 \times 10^{-2}$
Some work.....	$.4629 \times 10^{-2+}$	$.1723 \times 10^{-1}$
Unknown.....		
Age:		
65-69.....	$-.5711 \times 10^{-2}$	$.5370 \times 10^{-2}$
70-74.....	$.3753 \times 10^{-2}$	$.5300 \times 10^{-2}$
75 and over.....		

continued--

Table 3. continued --

Independent variables	Coefficients	Standard errors
Sex:		
Male.....	.1946 x 10 <sup>-2</sup>	.4628 x 10 <sup>-2</sup>
Female.....		
Welfare status:		
Some welfare.....	.2438 x 10 <sup>0†</sup>	.1449 x 10 <sup>-1</sup>
No welfare.....		
Regional price, ambulatory visits: RP4.....	-.4785 x 10 <sup>-1†</sup>	.1665 x 10 <sup>-1</sup>
Regional assignment rate.....	-.6196 x 10 <sup>-3†</sup>	.1758 x 10 <sup>-3</sup>
Income.....	.1291 x 10 <sup>-4§</sup>	.6961 x 10 <sup>-5</sup>
Income known status:		
Known.....	.9994 x 10 <sup>-1†</sup>	.1832 x 10 <sup>-1</sup>
Unknown.....	.3070 x 10 <sup>-2†</sup>	.9664 x 10 <sup>-3</sup>
RP4 squared.....	-.7264 x 10 <sup>-9*</sup>	.5228 x 10 <sup>-9</sup>
Income squared.....	-.1863 x 10 <sup>-4†</sup>	.7266 x 10 <sup>-5</sup>
Income times welfare status.....		
Income known status times welfare status.....	-.1266 x 10 <sup>0†</sup>	.1946 x 10 <sup>-1</sup>
Income squared times welfare status.....	.1079 x 10 <sup>-8†</sup>	.5416 x 10 <sup>-7</sup>
Sigma.....	.9036 x 10 <sup>-1</sup>	
Log of likelihood function.....	-.2231 x 10 <sup>4</sup>	
	Number	Percent
Distribution of observations:		
Lower limits.....	265	9
Upper limits.....	1194	40
Non limits.....	1541	51

\* Denotes coefficient significant at 90-80 percent confidence level 1.282.

† Denotes coefficient significant at higher than 95 percent confidence level 1.960.

§ Denotes coefficient significant at 95-90 percent confidence level 1.645.

Supplementary table 4. Demand for Complementary Insurance  
by the Aged: In-Hospital Visits

Independent variables	Coefficients	Standard errors
Constant term.....	$-0.2605 \times 10^0$	$0.9848 \times 10^{-1}$
Census region and size of place:		
Northeast urban.....	$.2412 \times 10^{-1}$	$.2971 \times 10^{-1}$
Northeast rural.....	$.1295 \times 10^{-1}$	$.1796 \times 10^{-1}$
North Central urban.....	$.6392 \times 10^{-4}$	$.2432 \times 10^{-1}$
North Central rural.....	$.1413 \times 10^{-1}$	$.2770 \times 10^{-1}$
West urban.....	$.1076 \times 10^{-1}$	$.5332 \times 10^{-1}$
West rural.....	$.4402 \times 10^{-1*}$	$.1852 \times 10^{-1}$
South urban.....	$.1250 \times 10^{0*}$	$.2486 \times 10^{-1}$
South rural.....		
Household size:		
One person.....	$.2743 \times 10^{-1+}$	$.1672 \times 10^{-1}$
Two or more persons.....	$-.6399 \times 10^{-1}$	$.6652 \times 10^{-1}$
Unknown.....		
Race:		
White.....	$.9510 \times 10^{-1*}$	$.2474 \times 10^{-1}$
Negro.....	$.1036 \times 10^{0+}$	$.7559 \times 10^{-1}$
All other and unknown.....		
Marital status:		
Married.....	$-.1724 \times 10^{-3}$	$.1602 \times 10^{-1}$
Nonmarried.....	$.1257 \times 10^{-1}$	$.5905 \times 10^{-1}$
Unknown.....		
Education:		
Less than 9 years.....	$-.1135 \times 10^{-1}$	$.1292 \times 10^{-1}$
9 years or more.....	$.5260 \times 10^{-1s}$	$.2917 \times 10^{-1}$
Unknown.....		
Health evaluation:		
Better than that of others...	$.7713 \times 10^{-2}$	$.1425 \times 10^{-1}$
Same as that of others.....	$.2045 \times 10^{-1+}$	$.1583 \times 10^{-1}$
Worse than that of others....		
Work status:		
No work.....	$-.1534 \times 10^{-1}$	$.1851 \times 10^{-1}$
Some work.....	$.2522 \times 10^{-1}$	$.4009 \times 10^{-1}$
Unknown.....		
Age:		
65-69.....	$.1698 \times 10^{-3}$	$.1606 \times 10^{-1}$
70-74.....	$.4524 \times 10^{-1*}$	$.1635 \times 10^{-1}$
75 and over.....		

continued--

Table 4. continued--

Independent variables	Coefficients	Standard errors
Sex:		
Male.....	$.2907 \times 10^{-1*}$	$.1257 \times 10^{-1}$
Female.....		
Welfare status:		
Some welfare.....	$.3806 \times 10^{0*}$	$.4596 \times 10^{-1}$
No welfare.....		
Regional price, in-hospital visits: RP8.....	$-.1864 \times 10^{-2}$	$.6528 \times 10^{-2}$
Regional assignment rate.....	$-.4740 \times 10^{-3}$	$.5847 \times 10^{-3}$
Income.....	$.2484 \times 10^{-4}$	$.2403 \times 10^{-4}$
Income known status:		
Known.....	$.1161 \times 10^{0}$	$.5174 \times 10^{-1}$
Unknown.....	$.8186 \times 10^{-4*}$	$.1456 \times 10^{-3}$
RP8 squared.....	$-.1137 \times 10^{-9}$	$.2213 \times 10^{-8}$
Income squared.....	$-.3307 \times 10^{-4\dagger}$	$.2468 \times 10^{-4}$
Income times welfare status.....	$.1578 \times 10^{0*}$	$.5469 \times 10^{-1}$
Income squared times welfare status.....	$.5859 \times 10^{-9}$	$.2244 \times 10^{-8}$
Sigma.....	$.1293 \times 10^0$	
Log of likelihood function.....	$-.6441 \times 10^3$	
	Number	Percent
Distribution of observations:		
Lower limits.....	193	25
Upper limits.....	233	31
Non limits.....	335	44

\* Denotes coefficient significant at higher than 95 percent confidence level 1.960.

† Denotes coefficient significant at 90-80 percent confidence level 1.282.

§ Denotes coefficient significant at 95-90 percent confidence level 1.645.

Supplementary table 5. Demand for Physicians' Services by the Aged: Office Visits

Independent variables	Coefficients	Standard errors
Constant term.....	$-.2887 \times 10^{3*}$	$.1735 \times 10^3$
Hospital stay:		
No.....		
Yes.....	$.4982 \times 10^{1+}$	$.3935 \times 10^0$
Census region and size of place:		
Northeast urban.....	$-.1644 \times 10^{1*}$	$.9920 \times 10^0$
Northeast rural.....	$-.1676 \times 10^0$	$.7402 \times 10^0$
North Central urban.....	$-.1255 \times 10^1$	$.1004 \times 10^1$
North Central rural.....	$-.5935 \times 10^0$	$.9984 \times 10^0$
West urban.....	$-.2177 \times 10^{1s}$	$.1395 \times 10^1$
West rural.....	$.3000 \times 10^{0+}$	$.1265 \times 10^1$
South urban.....	$.2066 \times 10^1$	$.2763 \times 10^1$
South rural.....		
Living arrangement:		
In institution.....		
Not in institution.....	$.1060 \times 10^{2+}$	$.9760 \times 10^0$
Household size:		
One person.....		
Two or more persons.....	$-.1199 \times 10^{-2}$	$.8024 \times 10^0$
Unknown.....	$.8041 \times 10^0$	$.4715 \times 10^1$
Race:		
White.....		
Negro.....	$-.2331 \times 10^{1+}$	$.9277 \times 10^0$
All other and unknown.....	$-.4940 \times 10^{1*}$	$.2828 \times 10^1$
Marital status:		
Married.....		
Nonmarried.....	$.1398 \times 10^0$	$.4951 \times 10^0$
Unknown.....	$-.2679 \times 10^{1s}$	$.2074 \times 10^1$
Education:		
Less than 9 years.....		
9 years or more.....	$-.1979 \times 10^0$	$.1310 \times 10^1$
Unknown.....	$-.3184 \times 10^{1+}$	$.1440 \times 10^1$
Health limitations:		
Confined to bed or house.....		
Other limitations.....	$.1191 \times 10^{1s}$	$.8860 \times 10^0$
No limitations.....	$.3368 \times 10^{1+}$	$.7380 \times 10^0$
Deceased.....	$.3483 \times 10^{1*}$	$.1913 \times 10^1$
Unknown.....	$.3508 \times 10^1$	$.3659 \times 10^1$
Health evaluation:		
Better than that of others.....		
Same as that of others.....	$.1861 \times 10^{1+}$	$.3686 \times 10^0$
Worse than that of others.....	$.3669 \times 10^{1+}$	$.7844 \times 10^0$

continued--

Table 5. continued--

Independent variables	Coefficients	Standard errors
Work status:		
No work.....		
Some work.....	$-.2572 \times 10^0$	$.7688 \times 10^0$
Unknown.....	$-.7116 \times 10^0$	$.1351 \times 10^1$
Age:		
65-69.....		
70-74.....	$-.6073 \times 10^0$	$.4729 \times 10^0$
75 and over.....	$-.6850 \times 10^0$	$.5280 \times 10^0$
Sex:		
Male.....		
Female.....	$.1174 \times 10^{1+}$	$.3985 \times 10^0$
Welfare status:		
Some welfare.....		
No welfare.....	$.4373 \times 10^1$	$.1410 \times 10^2$
1.0 minus coinsurance rate, ambulatory visits: C1.....	$.6268 \times 10^{3+}$	$.3078 \times 10^3$
1.0 minus coinsurance rate, in-hospital visits: C2.....	$-.4301 \times 10^2$	$.2511 \times 10^3$
Regional price, ambulatory visits: RP4.....	$.3065 \times 10^1$	$.4020 \times 10^1$
Regional price, in-hospital visits: RP8.....	$-.1857 \times 10^{1+}$	$.6964 \times 10^0$
Regional assignment rate.....	$-.5316 \times 10^{-1}$	$.3287 \times 10^{-1}$
Income.....	$.4036 \times 10^{-2}$	$.3990 \times 10^{-2}$
Income known status:		
Known.....		
Unknown.....	$.3144 \times 10^2$	$.3944 \times 10^2$
Deductible D.....	$.2215 \times 10^0$	$.2526 \times 10^0$
C1 squared.....	$-.3642 \times 10^{3+}$	$.1829 \times 10^3$
C2 squared.....	$-.4132 \times 10^2$	$.1537 \times 10^3$
RP4 squared.....	$-.2991 \times 10^{0*}$	$.1706 \times 10^0$
RP8 squared.....	$.1137 \times 10^{-1+}$	$.5412 \times 10^{-2}$
Income squared.....	$-.4576 \times 10^{-7}$	$.5711 \times 10^{-7}$
D squared.....	$-.3189 \times 10^{-2+}$	$.9965 \times 10^{-3}$
C1 times C2.....	$.7806 \times 10^2$	$.1543 \times 10^3$
C1 times RP4.....	$.1842 \times 10^1$	$.2938 \times 10^1$
C1 times income.....	$-.5276 \times 10^{-2}$	$.4609 \times 10^{-2}$
C1 times income known status....	$-.6626 \times 10^0$	$.4295 \times 10^0$
C1 times D.....	$.1827 \times 10^{1+}$	$.2484 \times 10^0$
C2 times RP8.....	$.1705 \times 10^{1+}$	$.6531 \times 10^0$
C2 times income.....	$.2111 \times 10^{-2}$	$.2222 \times 10^{-2}$
C2 times income known status....	$-.2290 \times 10^0$	$.1703 \times 10^0$
C2 times D.....	$-.2836 \times 10^0$	$.2614 \times 10^0$

continued--

Table 5. continued--

Independent variables	Coefficients	Standard errors
RP4 times D.....	.9364 x 10 <sup>-2</sup>	.1301 x 10 <sup>-1</sup>
RP8 times D.....	-.1214 x 10 <sup>-2</sup>	.2701 x 10 <sup>-2</sup>
Income times D.....	-.2013 x 10 <sup>-5</sup>	.3852 x 10 <sup>-5</sup>
Income times welfare status.....	-.9515 x 10 <sup>-3</sup>	.1246 x 10 <sup>-2</sup>
Income known status times D.....	-.1698 x 10 <sup>-1</sup>	.3526 x 10 <sup>-1</sup>
Income known status times welfare status.....	-.3830 x 10 <sup>1</sup>	.8851 x 10 <sup>1</sup>
Income squared times welfare status.....	.2893 x 10 <sup>-7</sup>	.6928 x 10 <sup>-7</sup>
Sigma.....	.8740 x 10 <sup>1</sup>	
Log of likelihood function.....	-.1054 x 10 <sup>5</sup>	
	Number	Percent
Distribution of observations....	3,954	100
Limits.....	1,266	32
Nonlimits.....	2,688	68

\* Denotes coefficient significant at 95-90 percent confidence level 1.645.

† Denotes coefficient significant at higher than 95 percent confidence level 1.960.

§ Denotes coefficient significant at 90-80 percent confidence level 1.282.

Supplementary table 6. Demand for Physicians' Services by  
the Aged: Clinic Visits

Independent variables	Coefficients	Standard errors
Constant term.....	$-.2327 \times 10^3^*$	$.1344 \times 10^3$
Hospital stay:		
No.....		
Yes.....	$.2864 \times 10^{1+}$	$.3245 \times 10^0$
Census region and size of place:		
Northeast urban.....		
Northeast rural.....	$-.1056 \times 10^{1+}$	$.9347 \times 10^0$
North Central urban.....	$.1233 \times 10^{1+}$	$.5839 \times 10^0$
North Central rural.....	$.1087 \times 10^{1s}$	$.7410 \times 10^0$
West urban.....	$.2529 \times 10^{1+}$	$.8688 \times 10^0$
West rural.....	$.2139 \times 10^{1*}$	$.1213 \times 10^1$
South urban.....	$.5049 \times 10^0$	$.7289 \times 10^1$
South rural.....	$-.1462 \times 10^1$	$.1829 \times 10^1$
Living arrangement:		
In institution.....		
Not in institution.....	$.3967 \times 10^{1+}$	$.8183 \times 10^0$
Household size:		
One person.....		
Two or more persons.....	$-.1093 \times 10^{1*}$	$.6118 \times 10^0$
Unknown.....	$-.1128 \times 10^1$	$.4099 \times 10^1$
Race:		
White.....		
Negro.....	$.5481 \times 10^0$	$.7320 \times 10^0$
All other and unknown.....	$-.5428 \times 10^0$	$.2182 \times 10^1$
Marital status:		
Married.....		
Nonmarried.....	$-.7942 \times 10^{1-}$	$.4246 \times 10^0$
Unknown.....	$.1179 \times 10^0$	$.1779 \times 10^1$
Education:		
Less than 9 years.....		
9 years or more.....	$.8381 \times 10^0$	$.9044 \times 10^0$
Unknown.....	$.8019 \times 10^0$	$.1080 \times 10^1$
Health limitations:		
Confined to bed or house.....		
Other limitations.....	$.3060 \times 10^0$	$.7359 \times 10^0$
No limitations.....	$.3665 \times 10^0$	$.6195 \times 10^1$
Deceased.....	$-.1091 \times 10^1$	$.1779 \times 10^1$
Unknown.....	$.7909 \times 10^0$	$.3545 \times 10^1$
Health evaluation:		
Better than that of others.....		
Same as that of others.....	$.2498 \times 10^{1+}$	$.3246 \times 10^0$
Worse than that of others.....	$.1536 \times 10^1$	$.5849 \times 10^0$

continued--

Table 6. continued--

Independent variables	Coefficients	Standard errors
Work status:		
No work.....	$-.2324 \times 10^0$	$.5790 \times 10^0$
Some work.....	$.1749 \times 10^0$	$.1190 \times 10^1$
Unknown.....		
Age:		
65-69.....	$.1459 \times 10^0$	$.3918 \times 10^0$
70-74.....	$-.7337 \times 10^0$	$.4434 \times 10^0$
75 and over.....		
Sex:		
Male.....	$-.6746 \times 10^{0+}$	$.3422 \times 10^0$
Female.....		
Welfare status:		
Some welfare.....	$-.3755 \times 10^1$	$.9720 \times 10^1$
No welfare.....		
1.0 minus coinsurance rate, ambulatory visits: C1.....	$.4806 \times 10^{3+}$	$.2474 \times 10^3$
1.0 minus coinsurance rate, in-hospital visits: C2.....	$.3129 \times 10^2$	$.2050 \times 10^3$
Regional price, office visits: RP6.....	$-.7116 \times 10^{1*}$	$.4149 \times 10^1$
Regional price, clinic visits: RP7.....	$.3854 \times 10^{1s}$	$.2827 \times 10^1$
Regional price, in-hospital visits: RP8.....	$-.2263 \times 10^{-1}$	$.6320 \times 10^0$
Regional assignment rate.....	$-.5804 \times 10^{-2}$	$.2081 \times 10^{-1}$
Income.....	$.1939 \times 10^{-2}$	$.3714 \times 10^{-2}$
Income known status:		
Known.....	$.1262 \times 10^2$	$.3383 \times 10^2$
Unknown.....	$.7699 \times 10^{0+}$	$.2258 \times 10^0$
Deductible D.....	$-.2446 \times 10^{3s}$	$.1522 \times 10^3$
C1 squared.....	$.2487 \times 10^1$	$.1247 \times 10^3$
C2 squared.....	$.9387 \times 10^{-1}$	$.1332 \times 10^0$
RP6 squared.....	$.4773 \times 10^{-1s}$	$.3413 \times 10^{-1}$
RP7 squared.....	$.6913 \times 10^{-3}$	$.5053 \times 10^{-2}$
RP8 squared.....	$.1724 \times 10^{-7}$	$.4709 \times 10^{-7}$
Income squared.....	$-.7220 \times 10^{-3}$	$.8712 \times 10^{-3}$
D squared.....	$-.3929 \times 10^2$	$.1242 \times 10^3$
C1 times C2.....	$.8224 \times 10^{1+}$	$.3695 \times 10^1$
C1 times RP6.....	$-.5121 \times 10^{1*}$	$.2911 \times 10^1$
C1 times RP7.....	$-.4749 \times 10^{-2}$	$.4389 \times 10^{-2}$
C1 times income.....	$-.4224 \times 10^0$	$.3788 \times 10^0$
C1 times income known status....	$-.1869 \times 10^0$	$.2011 \times 10^0$
C1 times D.....	$-.5836 \times 10^0$	$.5743 \times 10^0$
C2 times RP8.....	$.2221 \times 10^{-2}$	$.2011 \times 10^{-2}$
C2 times income.....	$.2573 \times 10^{2*}$	$.1452 \times 10^2$
C2 times income known status....	$-.4312 \times 10^{0+}$	$.2092 \times 10^0$
C2 times D.....		

continued--

Table 6. continued--

Independent variables	Coefficients	Standard errors
RP6 times D.....	$-.2750 \times 10^{-1+}$	$.1368 \times 10^{-1}$
RP7 times D.....	$-.1724 \times 10^{-1+}$	$.8278 \times 10^{-2}$
RP8 times D.....	$.9365 \times 10^{-2+}$	$.2878 \times 10^{-2}$
Income times D.....	$.1046 \times 10^{-5}$	$.3390 \times 10^{-5}$
Income times welfare status.....	$.4682 \times 10^{-3}$	$.9878 \times 10^{-3}$
Income known status times D.....	$.3687 \times 10^{-1}$	$.3007 \times 10^{-1}$
Income known status times welfare status.....	$-.6571 \times 10^0$	$.6458 \times 10^1$
Income squared times welfare status.....	$-.4513 \times 10^{-7}$	$.5479 \times 10^{-7}$
Sigma.....	$.5719 \times 10^1$	
Log of likelihood function.....	$-.3348 \times 10^4$	
	Number	Percent
Distribution of observations....	3,904	100
Limits.....	3,163	81
Nonlimits.....	741	19

Note: Clinic visits include clinic, emergency room, and other locations, but not home visits or telephone contacts.

\* Denotes coefficient significant at 95-90 percent confidence level 1.645.

+ Denotes coefficient significant at higher than 95 percent confidence level 1.960.

§ Denotes coefficient significant at 90-80 percent confidence level 1.282.

Supplementary table 7. Frequency and Distribution of  $K_1$  (Ambulatory Medical-Care Visits Coinsurance Rate) and  $K_2$  (In-Hospital Medical Care Visits Coinsurance Rate), Restricted Sample

Coinsurance rate class	$K_1$			$K_2$		
	Frequency	Percent	Distribution	Frequency	Percent	Distribution
0.0 < 0.02.....	42	1.06	42	243	6.14	243
0.02 < 0.04.....	267	6.75	309	68	1.72	311
0.04 < 0.06.....	125	3.16	434	21	0.53	332
0.06 < 0.08.....	56	1.42	490	89	2.25	421
0.08 < 0.10.....	57	1.44	547	571	14.44	992
0.10 < 0.12.....	129	3.26	676	932	23.57	1,924
0.12 < 0.14.....	263	6.65	939	990	25.04	2,914
0.14 < 0.16.....	1,237	31.29	2,176	629	15.91	3,543
0.16 < 0.18.....	1,572	39.76	3,748	304	7.69	3,847
0.18 < 0.20.....	206	5.21	3,954	107	2.71	3,954
Total.....	3,954	100.00		3,954	100.00	

Note: This restricted sample, which is often used in testing and estimating, consists of persons who are SMI enrollees, who have had 12 interviews, and for whom the relevant prices and the assignment rate are available.

Supplementary table 8. Frequency and Distribution of the  
Carryover Basis of the Deductible, Total Sample

Carryover class (\$)	Carryover			
	Frequency	Percent	Distribution	Percent
0.....	3.605	78.93	3.605	78.93
1 - 5.....	221	4.84	3.826	83.77
6 - 10.....	278	6.09	4.104	89.86
11 - 15.....	128	2.80	4.232	92.66
16 - 20.....	93	2.04	4.325	94.70
21 - 25.....	47	1.03	4.372	95.73
26 - 30.....	41	0.90	4.413	96.63
31 - 35.....	27	0.59	4.440	97.22
36 - 40.....	30	0.66	4.470	97.88
41 - 45.....	16	0.35	4.486	98.23
46 - 50.....	81	1.77	4.567	100.00
Total.....	4.567	100.00		

Note: The deductible is defined as \$50 minus the carryover; corresponding classes for the deductible would be \$50, \$49-45, and so forth.

Supplementary table 9. Frequency and Distribution of  
Family Income, Restricted Sample

Family income class (\$)	Family income			
	Frequency	Percent	Distribution	Percent
Sample with known income				
Less than 1,000...	323	9.78	323	9.78
1,000-1,999.....	698	21.12	1,021	30.90
2,000-2,999.....	627	18.98	1,648	49.88
3,000-3,999.....	473	14.32	2,121	64.20
4,000-4,999.....	323	9.78	2,444	73.98
5,000-7,499.....	378	11.44	2,822	85.42
7,500-9,999.....	164	4.96	2,986	90.38
10,000-14,999....	181	5.48	3,167	95.86
15,000 and over...	137	4.14	3,304	100.00
Total.....	3,304	100.00		
Sample with known and unknown income				
Less than 1,000...	323	8.2	323	8.2
1,000-1,999.....	698	17.7	1,021	25.9
2,000-2,999.....	627	15.9	1,648	41.8
3,000-3,999.....	473	12.0	2,121	53.8
4,000-4,999.....	323	8.2	2,444	62.0
5,000-7,499.....	378	9.6	2,822	71.6
7,500-9,999.....	164	4.1	2,986	75.7
10,000-14,999....	181	4.6	3,167	80.3
15,000 and over...	137	3.5	3,304	83.8
Unknown.....	650	16.4	3,954	100.2
Total.....	3,954	100.2		

Note: This restricted sample, which is often used in testing and estimating, consists of persons who are SMI enrollees, who have had 12 interviews, and for whom the relevant prices and the assignment rate are available.

Supplementary table 10. Frequency and Distribution of  
Family Income, Total Sample

Family income class (\$)	Family income			
	Frequency	Percent	Distribution	Percent
Sample with known income				
Less than 1,000..	378	10.52	378	10.52
1,000-1,999.....	764	21.26	1,142	31.78
2,000-2,999.....	673	18.73	1,815	50.51
3,000-3,999.....	508	14.14	2,323	64.65
4,000-4,999.....	350	9.74	2,673	74.39
5,000-7,499.....	406	11.30	3,079	85.69
7,500-9,999.....	178	4.95	3,257	90.64
10,000-14,999....	195	5.43	3,452	96.07
15,000 and over..	141	3.93	3,593	100.00
Total.....	3,593	100.00		
Sample with known and unknown income				
Less than 1,000..	378	8.3	378	8.3
1,000-1,999.....	764	16.7	1,142	25.0
2,000-2,999.....	673	14.7	1,815	39.7
3,000-3,999.....	508	11.1	2,323	50.8
4,000-4,999.....	350	7.7	2,673	58.5
5,000-7,499.....	406	8.9	3,079	67.4
7,500-9,999.....	178	3.9	3,257	71.3
10,000-14,999....	195	4.3	3,452	75.6
15,000 and over..	141	3.1	3,593	78.7
Unknown.....	974	21.3	4,567	100.0
Total.....	4,567	100.0		

Supplementary table 11. Frequency and Distribution of RP4  
(Regional Price of Ambulatory Physicians' Visits),  
Total Sample

Regional price class (\$)	RP4			
	Frequency	Percent	Distribution	Percent
Sample for whom price available				
Less than 6.00...	111	2.56	111	2.56
6.00-6.49.....	472	10.87	583	13.43
6.50-6.99.....	427	9.84	1,010	23.27
7.00-7.49.....	490	11.29	1,500	34.56
7.50-7.99.....	655	15.09	2,155	49.65
8.00-8.49.....	494	11.38	2,649	61.03
8.50-8.99.....	302	6.96	2,951	67.99
9.00-9.49.....	400	9.21	3,351	77.20
9.50-9.99.....	54	1.24	3,405	78.44
10.00-10.99.....	600	13.82	4,005	92.26
11.00 and over...	336	7.74	4,341	100.00
Total.....	4,341	100.00		
Sample for whom prices available and unavailable				
Not available....	226	4.95	226	4.95
Less than 6.00...	111	2.43	337	7.38
6.00-6.49.....	472	10.33	809	17.71
6.50-6.99.....	427	9.35	1,236	27.06
7.00-7.49.....	490	10.73	1,726	37.79
7.50-7.99.....	655	14.34	2,381	52.13
8.00-8.49.....	494	10.82	2,875	62.95
8.50-8.99.....	302	6.61	3,177	69.56
9.00-9.49.....	400	8.76	3,577	78.32
9.50-9.99.....	54	1.18	3,631	79.50
10.00-10.99.....	600	13.14	4,231	92.64
11.00 and over...	336	7.36	4,567	100.00
Total.....	4,567	100.00		

Supplementary table 12. Frequency and Distribution of RP6  
(Regional Price of Physicians' Office Visits),  
Total Sample

Regional price class (\$)	RP6			
	Frequency	Percent	Distribution	Percent
Sample for whom price available				
Less than 6.00.....	111	2.56	111	2.56
6.00-6.49.....	598	13.78	709	16.34
6.50-6.99.....	718	16.54	1,427	32.88
7.00-7.49.....	512	11.79	1,939	44.67
7.50-7.99.....	295	6.79	2,234	51.46
8.00-8.49.....	525	12.10	2,759	63.56
8.50-8.99.....	182	4.19	2,941	67.75
9.00-9.49.....	437	10.07	3,378	77.82
9.50-9.99.....	300	6.91	3,678	84.73
10.00-10.99.....	327	7.53	4,005	92.26
11.00 and over....	336	7.74	4,341	100.00
Total.....	4,341	100.00		
Sample for whom prices available and unavailable				
Not available.....	226	4.95	226	4.95
Less than 6.00.....	111	2.43	337	7.38
6.00-6.49.....	598	13.09	935	20.47
6.50-6.99.....	718	15.72	1,653	36.19
7.00-7.49.....	512	11.21	2,165	47.40
7.50-7.99.....	295	6.46	2,460	53.86
8.00-8.49.....	525	11.49	2,985	65.35
8.50-8.99.....	182	3.99	3,167	69.34
9.00-9.49.....	437	9.57	3,604	78.91
9.50-9.99.....	300	6.57	3,904	85.48
10.00-10.99.....	327	7.16	4,231	92.64
11.00 and over....	336	7.36	4,567	100.00
Total.....	4,567	100.00		

Supplementary table 13. Frequency and Distribution of RP7  
(Regional Price of Physicians' Clinic Visits),  
Total Sample

Regional price class (\$)	RP7			
	Frequency	Percent	Distribution	Percent
Sample for whom price available				
Less than 8.00....	179	4.17	179	4.17
8.00-8.99.....	104	2.43	283	6.60
9.00-9.99.....	434	10.12	717	16.72
10.00-10.49.....	836	19.50	1,553	36.22
10.50-10.99.....	410	9.56	1,963	45.78
11.00-11.99.....	612	14.28	2,575	60.06
12.00-12.99.....	683	15.93	3,258	75.99
13.00-13.99.....	519	12.11	3,777	88.10
14.00-14.99.....	430	10.03	4,207	98.13
15.00 and over....	80	1.87	4,287	100.00
Total.....	4,287	100.00		
Sample for whom prices available and unavailable				
Not available....	280	6.13	280	6.13
less than 8.00...	179	3.92	459	10.05
8.00-8.99.....	104	2.28	563	12.33
9.00-9.99.....	434	9.50	997	21.83
10.00-10.49.....	836	18.31	1,833	40.14
10.50-10.99.....	410	8.98	2,243	49.12
11.00-11.99.....	612	13.40	2,855	62.52
12.00-12.99.....	683	14.95	3,538	77.47
13.00-13.99.....	519	11.36	4,057	88.83
14.00-14.99.....	430	9.42	4,487	98.25
15.00 and over...	80	1.75	4,567	100.00
Total.....	4,567	100.00		

Supplementary table 14. Frequency and Distribution of RP8  
(Regional Price of In-Hospital Physicians' Visits),  
Total Sample

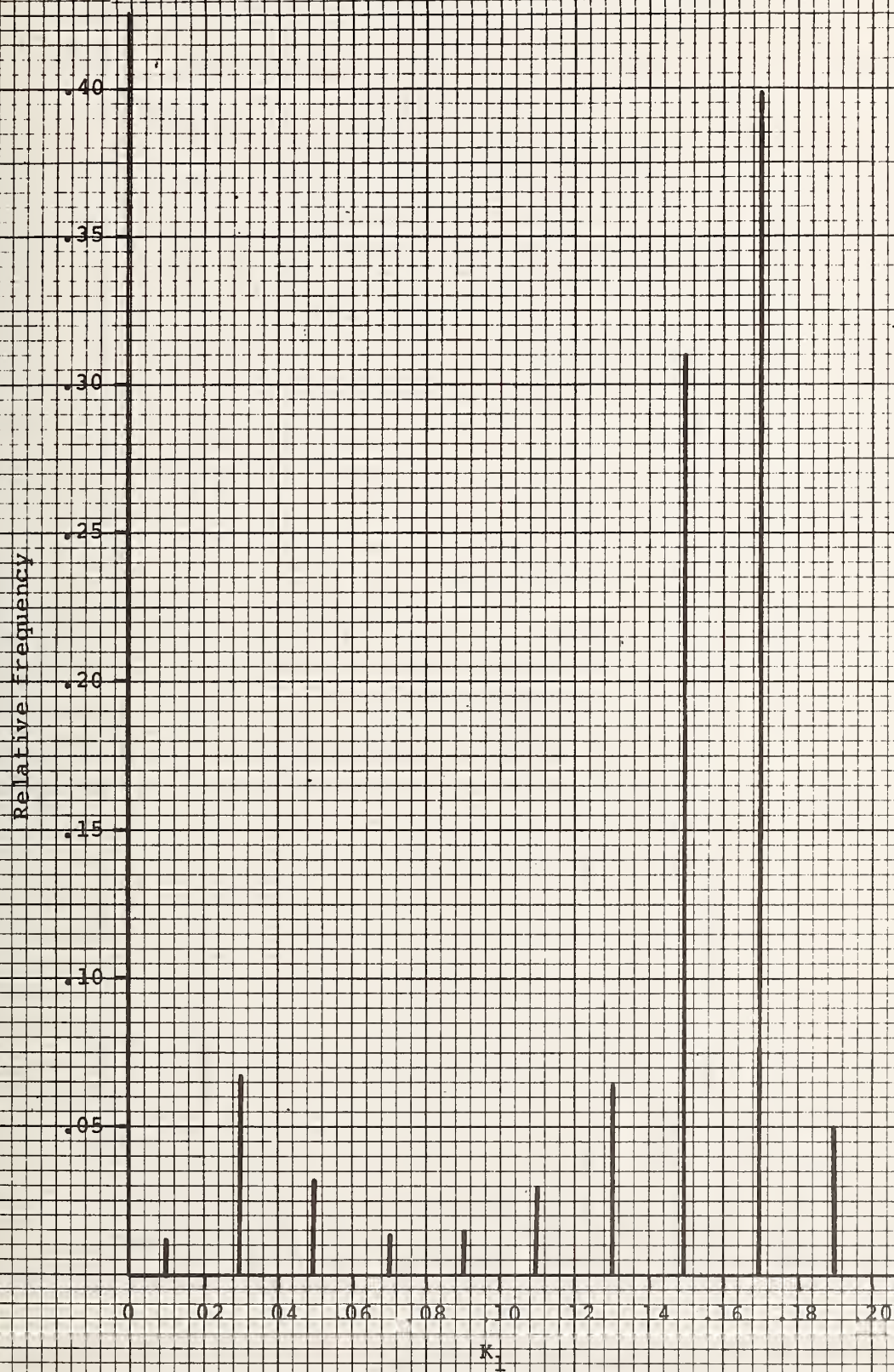
Regional price class (\$)	RP8			
	Frequency	Percent	Distribution	Percent
Sample for whom price available				
Less than 12.00....	111	2.56	111	2.56
12.00-12.99.....	289	6.66	400	9.22
13.00-13.99.....	398	9.17	798	18.39
14.00-14.99.....	189	4.35	987	22.74
15.00-15.99.....	265	6.10	1,252	28.84
16.00-16.99.....	704	16.22	1,956	45.06
17.00-17.99.....	102	2.35	2,058	47.41
18.00-18.99.....	179	4.12	2,237	51.53
19.00-19.99.....	349	8.04	2,586	59.57
20.00-20.99.....	167	3.85	2,753	63.42
21.00-21.99.....	0	0	2,753	63.42
22.00-22.99.....	139	3.20	2,892	66.62
23.00-23.99.....	585	13.48	3,477	80.10
24 and over.....	864	19.90	4,341	100.00
Total.....	4,341	100.00		
Sample for whom prices available and unavailable				
Not available.....	226	4.95	226	4.95
Less than 12.00...	111	2.43	337	7.38
12.00-12.99.....	289	6.33	626	13.71
13.00-13.99.....	398	8.72	1,024	22.43
14.00-14.99.....	189	4.14	1,213	26.57
15.00-15.99.....	265	5.80	1,478	32.37
16.00-16.99.....	704	15.41	2,182	47.78
17.00-17.99.....	102	2.23	2,284	50.01
18.00-18.99.....	179	3.92	2,463	53.93
19.00-19.99.....	349	7.64	2,812	61.57
20.00-20.99.....	167	3.66	2,979	65.23
21.00-21.99.....	0	0	2,979	65.23
22.00-22.99.....	139	3.04	3,118	68.27
23.00-23.99.....	585	12.81	3,703	81.08
24.00 and over....	864	18.92	4,567	100.00
Total.....	4,567	100.00		

Supplementary table 15. Frequency and Distribution of the  
Regional Assignment Rate, Restricted Sample

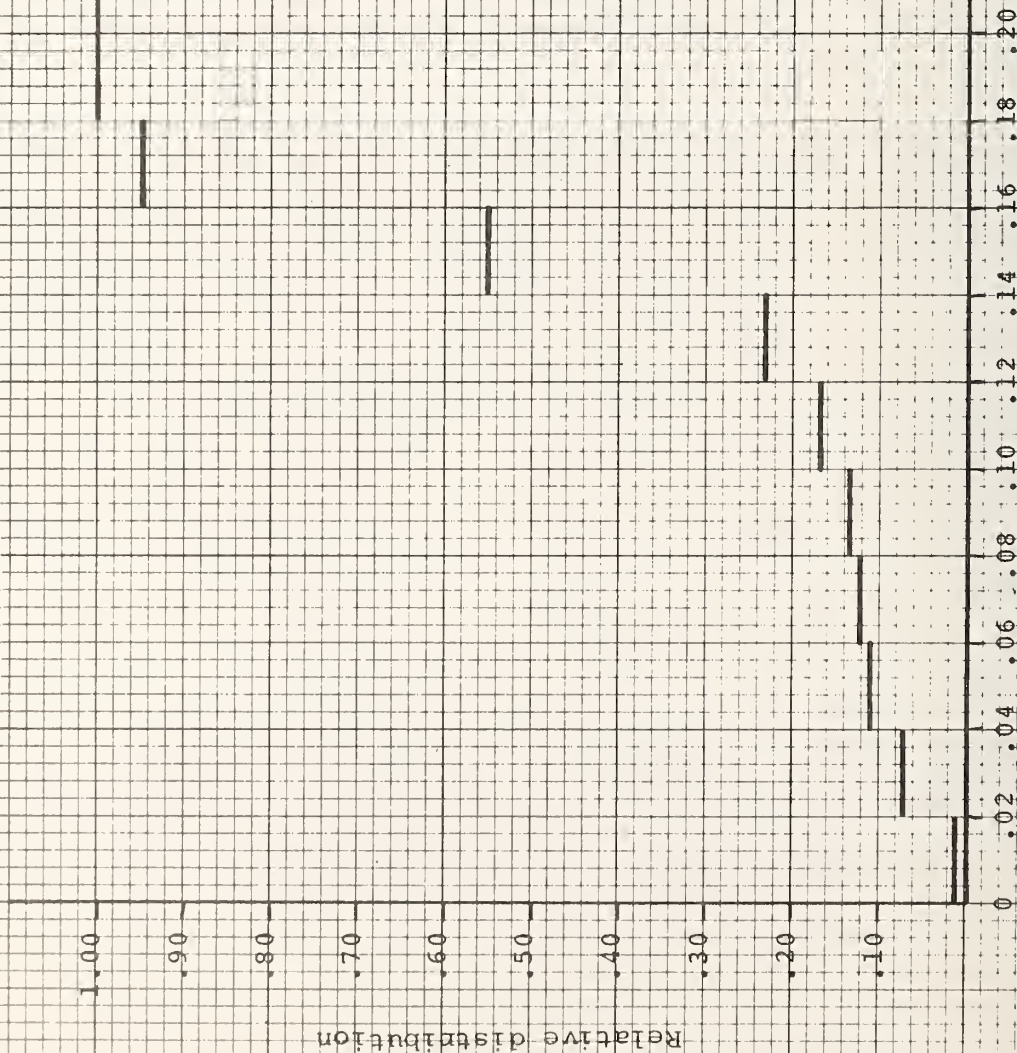
Regional assign- ment rate class <sup>a/</sup>	Regional assignment rate			
	Frequency	Percent	Distribution	Percent
Less than 30.00....	39	0.99	39	0.99
30.00-34.99.....	50	1.26	89	2.25
35.00-39.99.....	60	1.52	149	3.77
40.00-44.99.....	543	13.73	692	17.50
45.00-49.99.....	703	17.78	1,395	35.28
50.00-54.99.....	241	6.09	1,636	41.37
55.00-59.99.....	451	11.41	2,087	52.78
60.00-64.99.....	623	15.76	2,710	68.54
65.00-69.99.....	442	11.18	3,152	79.72
70.00-74.99.....	329	8.32	3,481	88.04
75.00-79.99.....	314	7.94	3,795	95.98
80.00 and over.....	159	4.02	3,954	100.00
Total.....	3,954	100.00		

Note: This restricted sample, which is often used in testing and estimating, consists of persons who are SMI enrollees, who have had 12 interviews, and for whom the relevant prices and the assignment rate are available.

<sup>a/</sup> The "net" assignment rate expressed as a proportion of assigned and not assigned claims.

Supplementary chart 1. Relative Frequency of  $K_1$ 

Supplementary chart 2. Relative Distribution of  $K_1$



Supplementary chart 3. Relative Frequency of  $K_2$

117.

Relative frequency

.40

.35

.30

.25

.20

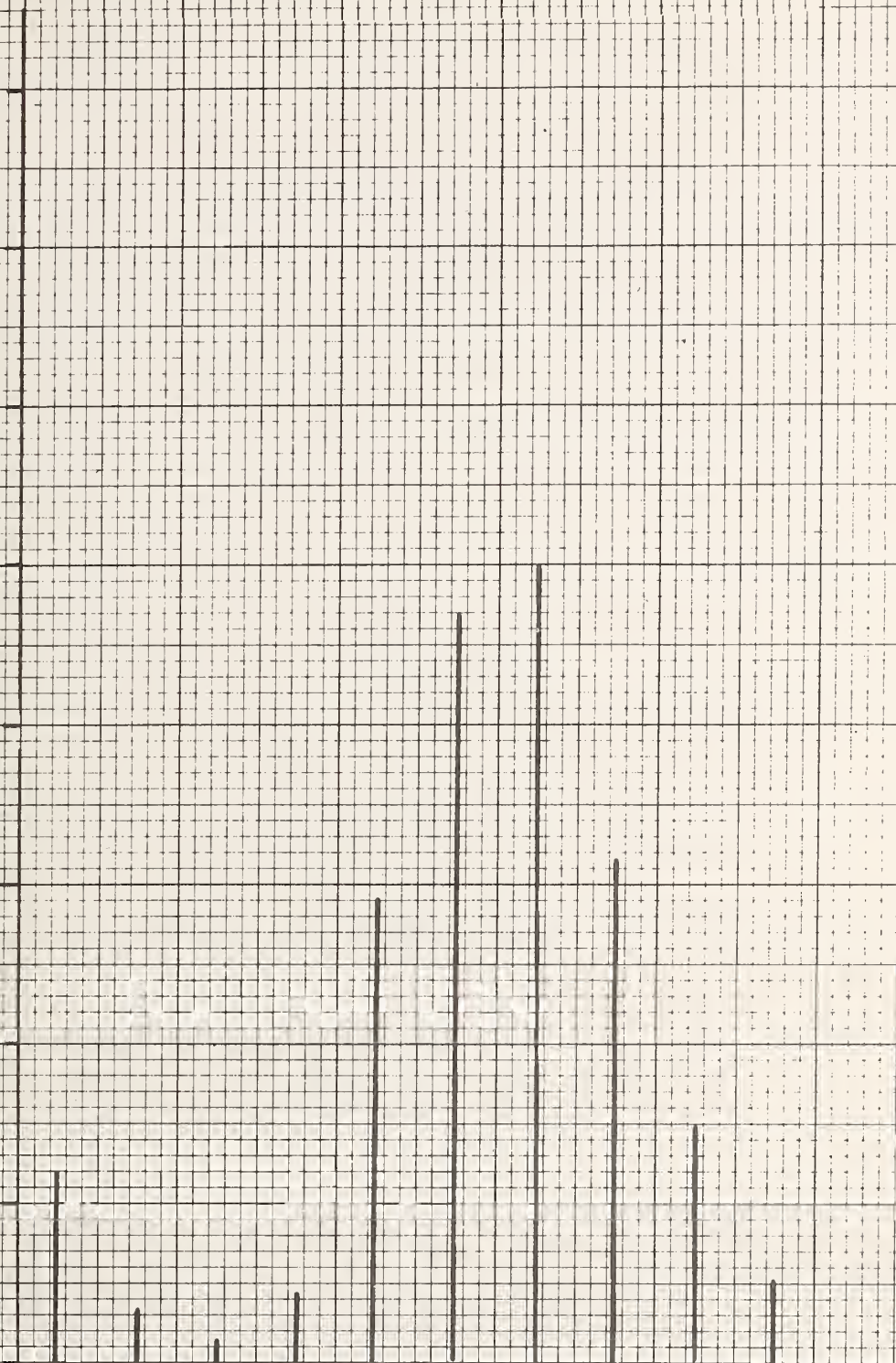
.15

.10

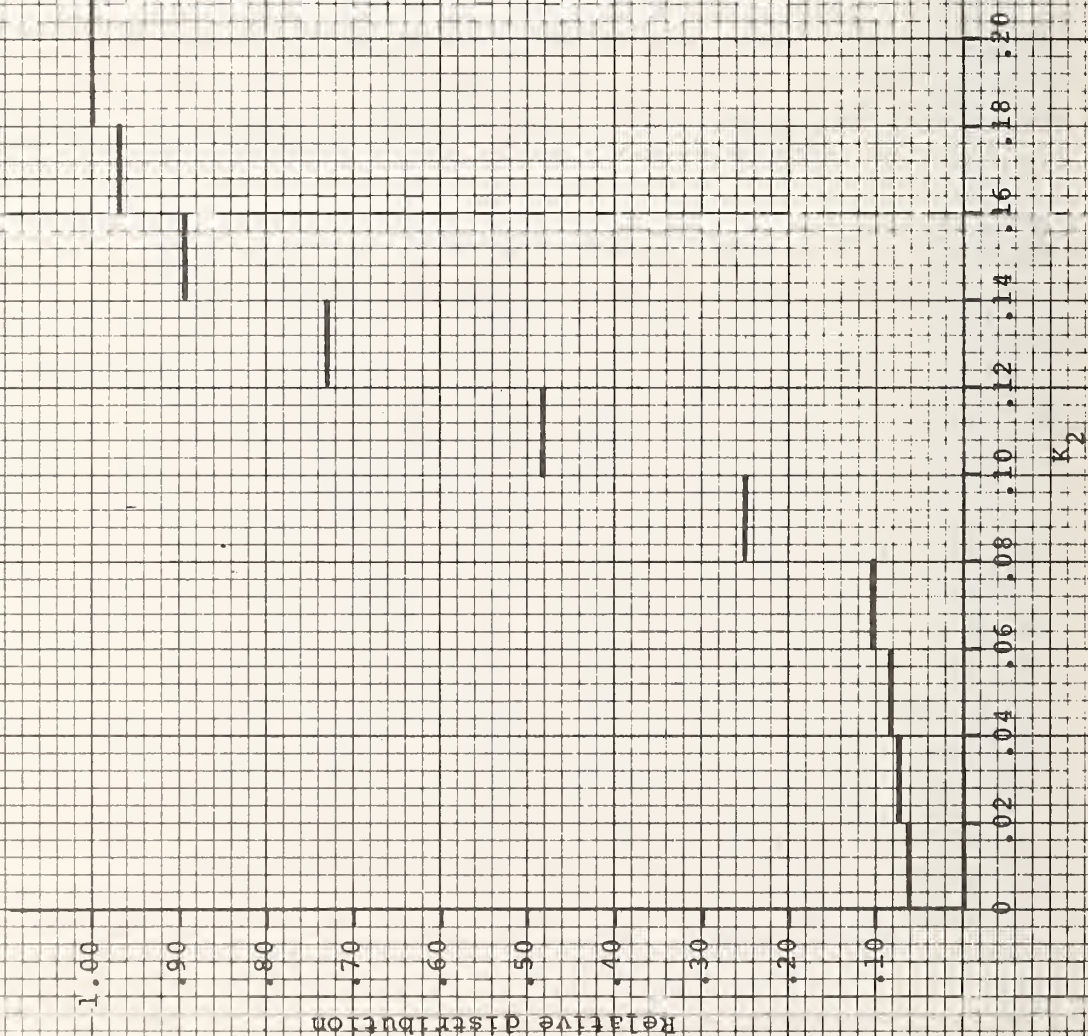
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0 .02 .04 .06 .08 .10 .12 .14 .16 .18 .20

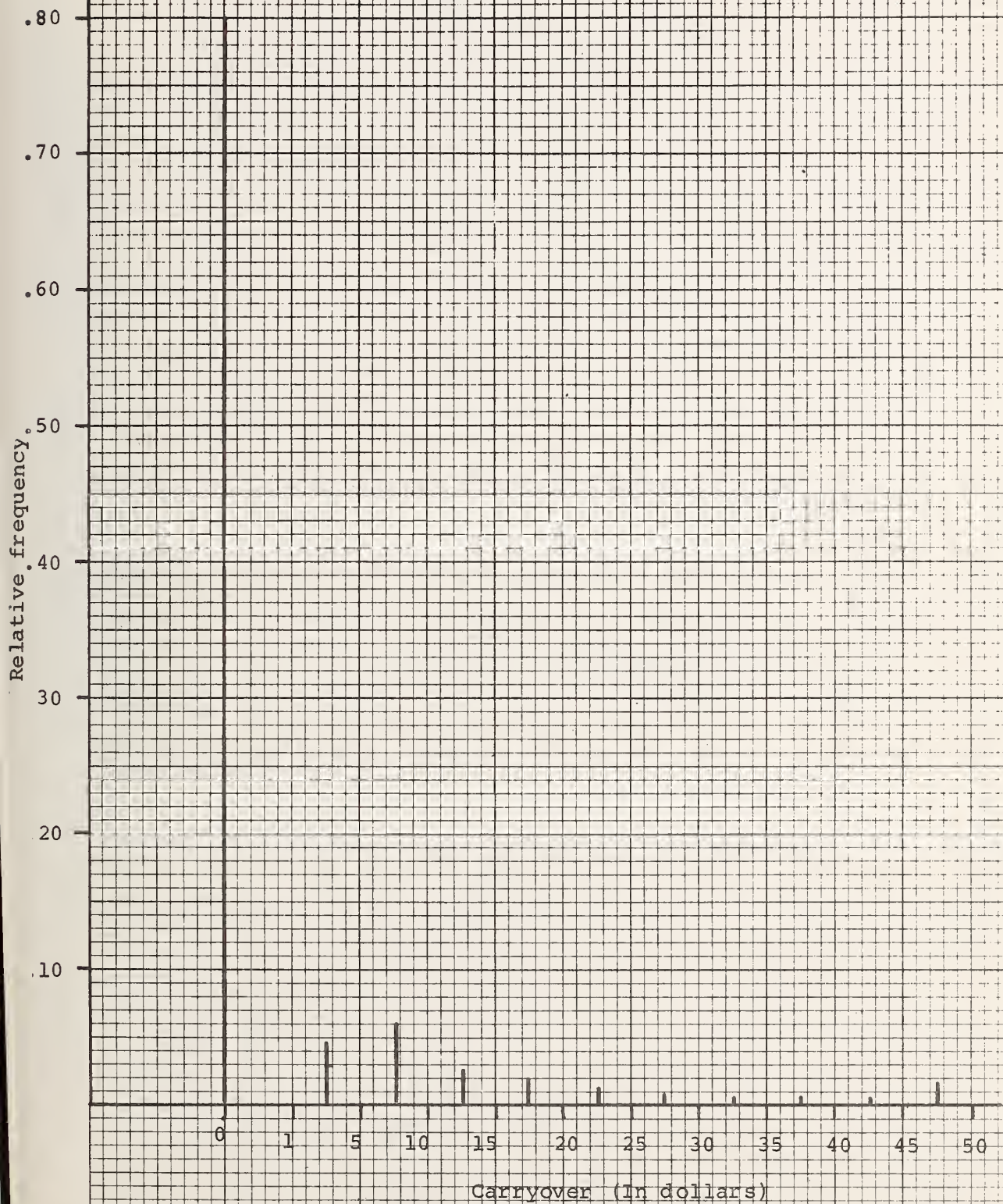
$K_2$



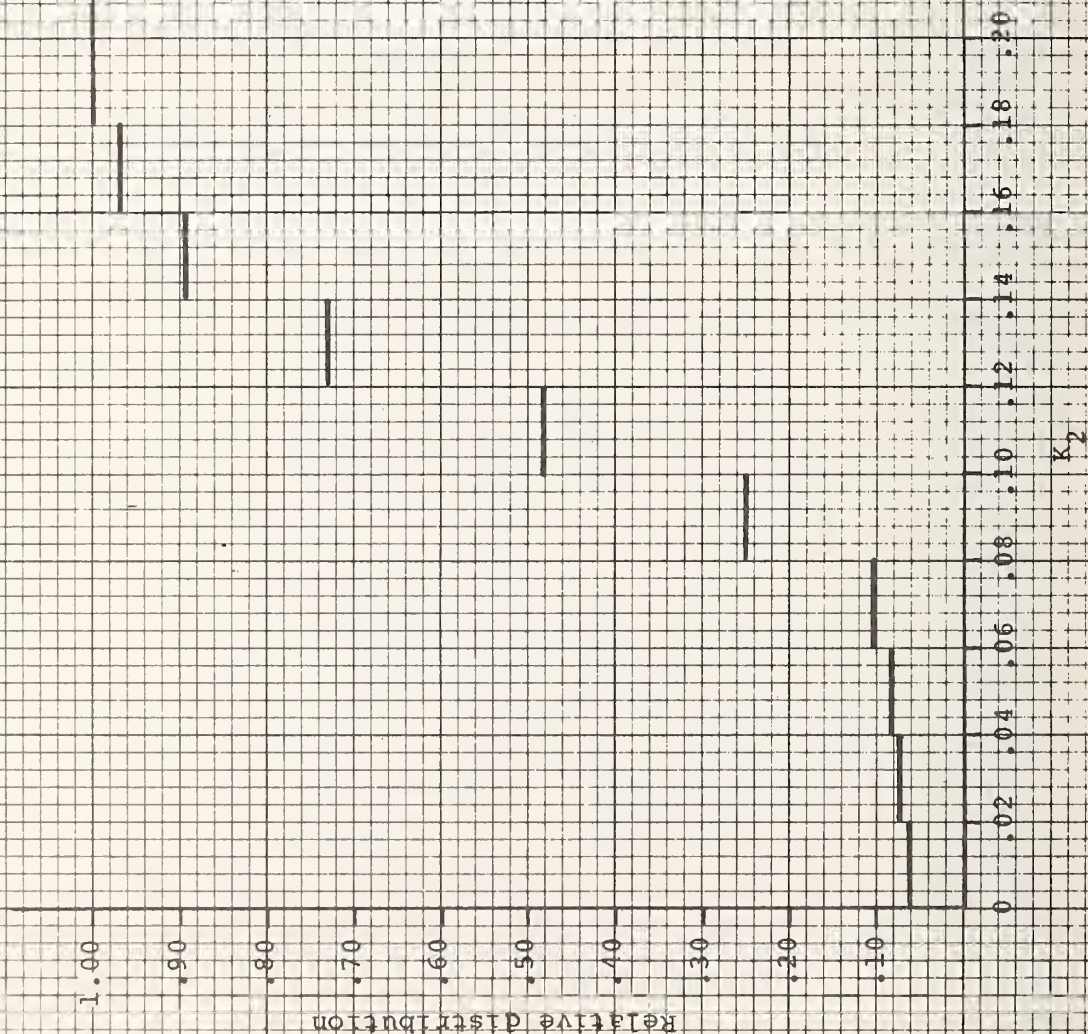
Supplementary chart 4. Relative Distribution of  $K_2$



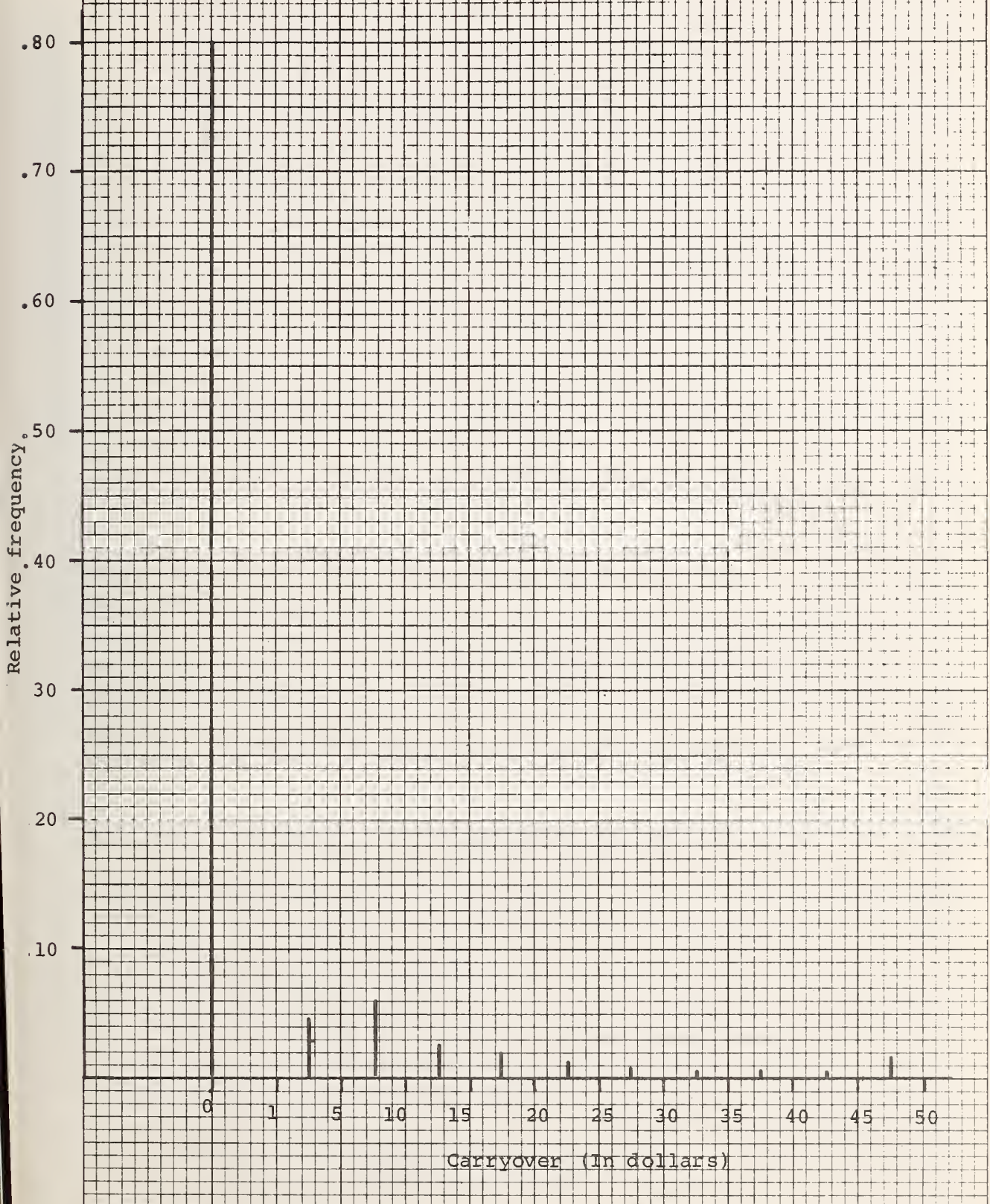
Supplementary chart 5. Relative Frequency of Carryover



Supplementary chart 4. Relative Distribution of  $K_2$



Supplementary chart 5. Relative Frequency of Carryover

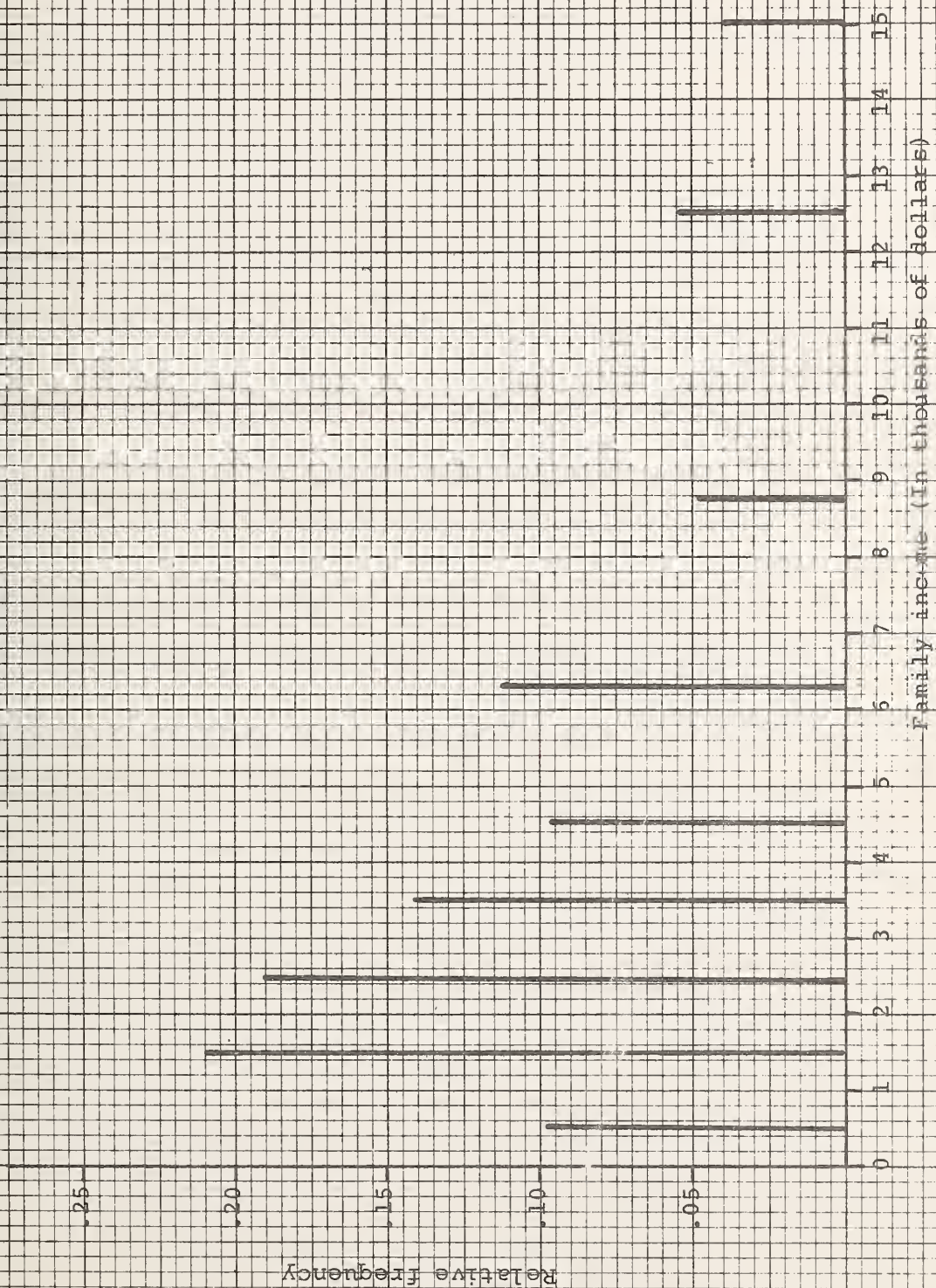


Supplementary chart 6. Relative Distribution of Carryover

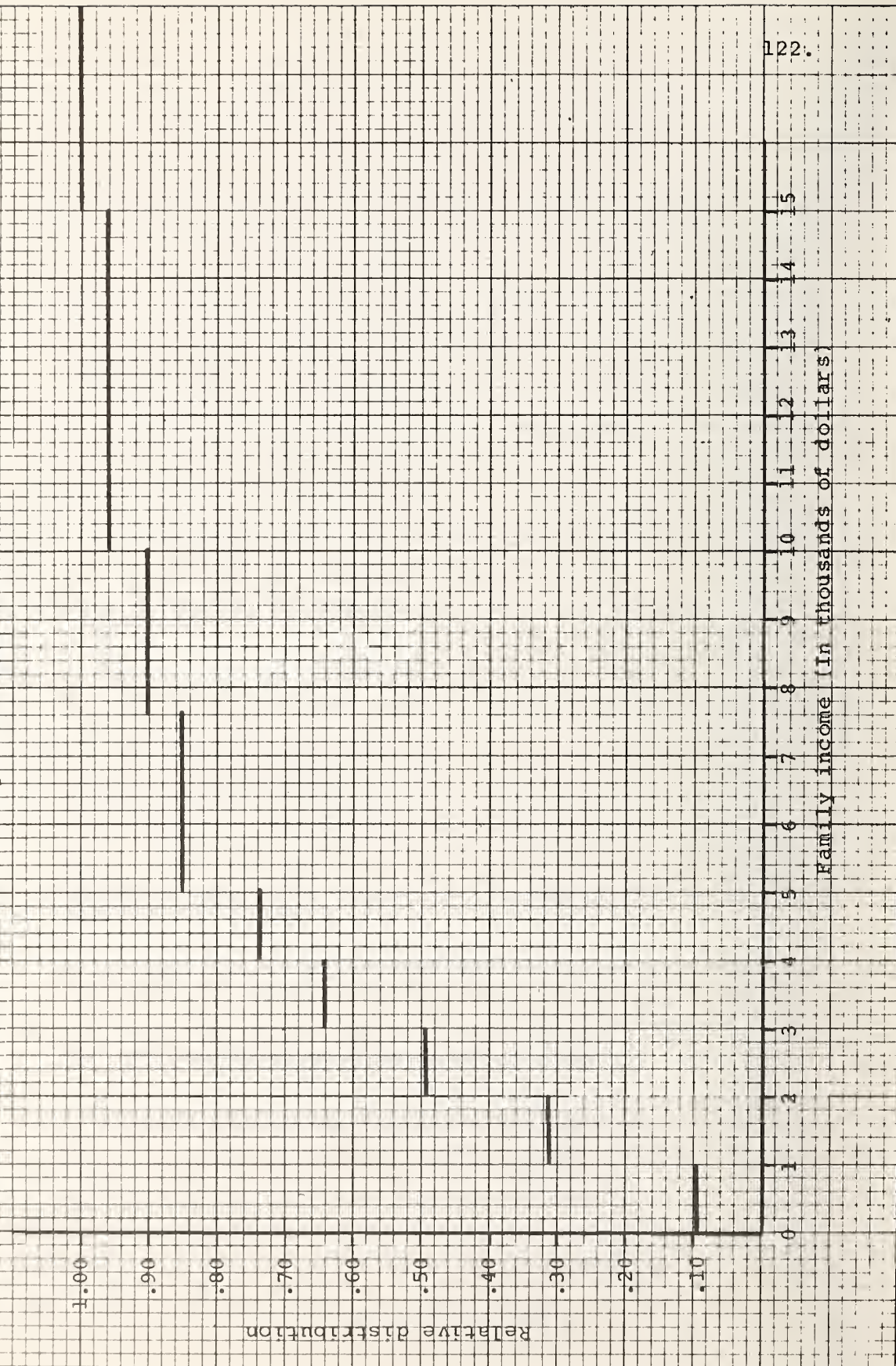


120.

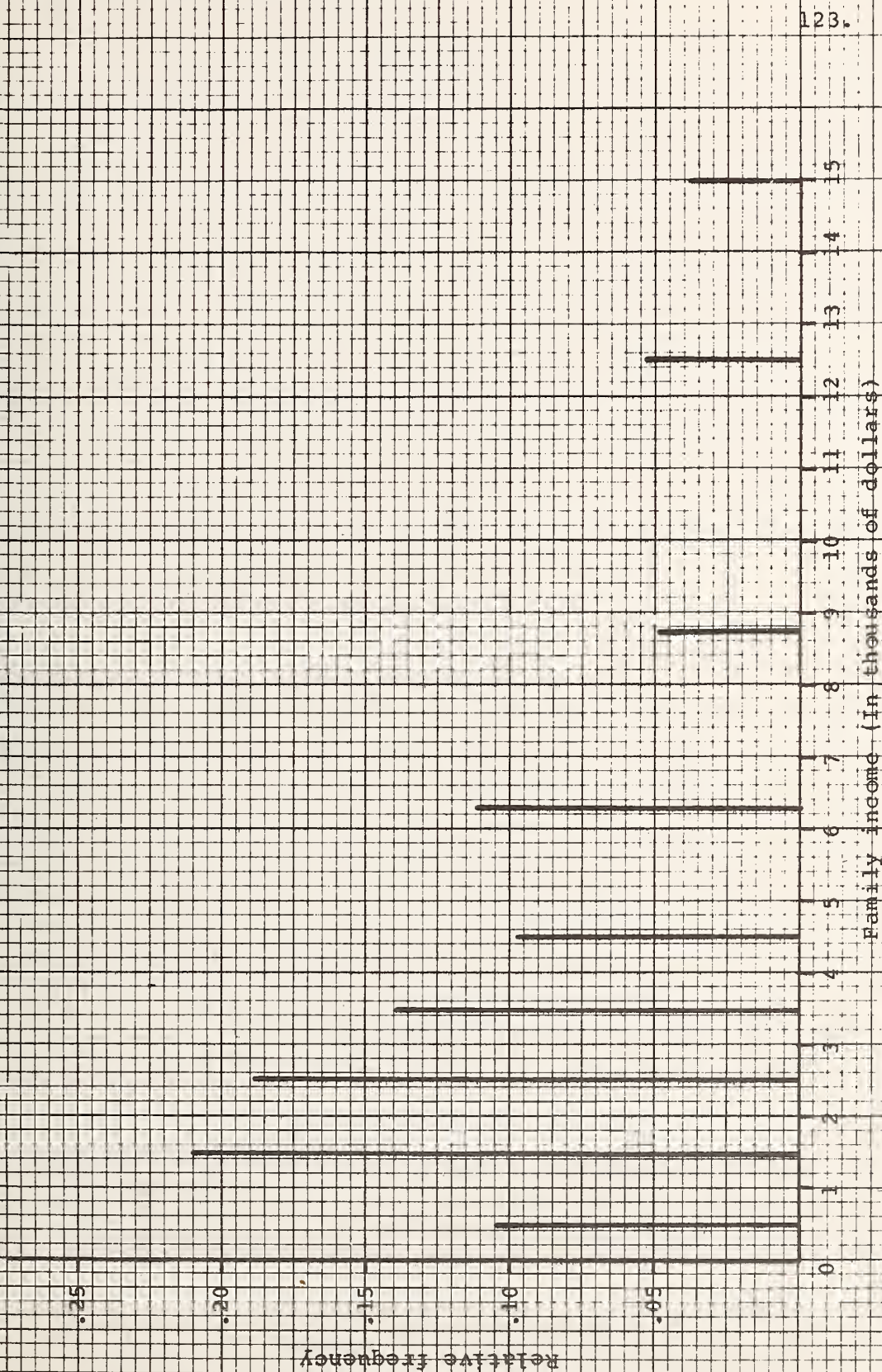
Supplementary chart 7. Relative Frequency of Family Income, Restricted Sample,  
Income Known



Supplementary chart 8. Relative Distribution of Family Income, Restricted Sample, Income Known



Supplementary chart 9. Relative Frequency of Family Income, Total Sample,  
Income Known



Supplementary chart 10. Relative distribution of Family Income, Total Sample, Income Known







THE EFFECTS OF THE MEDICARE METHOD OF  
REIMBURSEMENT ON PHYSICIANS' FEES  
AND ON BENEFICIARIES' UTILIZATION

VOLUME III  
APPENDIXES

ROBERT R. NATHAN ASSOCIATES, INC.  
WASHINGTON, D.C.

APRIL 1973

THE EFFECTS OF THE MEDICARE METHOD OF  
REIMBURSEMENT ON PHYSICIANS' FEES  
AND ON BENEFICIARIES' UTILIZATION

Volume III. Appendixes

Submitted to the  
Bureau of Health Insurance  
Social Security Administration  
Department of Health, Education and Welfare  
Baltimore, Maryland

Contract Number SSA 72-2763

by  
Robert R. Nathan Associates, Inc.  
Washington, D.C.

April 1973

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APPENDIX A. RRNA SPECIAL TAPES: DATA INPUT  
FOR THE ESTIMATING OF VOLUME II, PART II

# I. THE ROBERT R. NATHAN ASSOCIATES SPECIAL 12-MONTH AND 3-MONTH TAPE FILES

The Robert R. Nathan Associates (RRNA) special tape files are constructed from:

1. The Current Medicare Survey (CMS)  
(see Exhibit 1)
2. The Demographic Record (DR) of the  
CMS sample (see Exhibit 2)
3. The Reasonable Charge Tabulations
4. Data on the assignment rates.

All of these data relate to 1969, the most recent year for which the CMS was available for constructing a special tape.

A description of the source and basic items of information of the CMS and DR, given by the Office of Research and Statistics, reads:

The Current Medicare Survey (CMS) uses a two-stage probability sample design. The sample represents all medical insurance enrollees in the 50 states and the District of Columbia. The first-stage sample consists of 105 primary sampling units (PSU's). Each PSU consists of a standard metropolitan statistical area (SMSA), a single county, or several adjacent counties. Within these first-stage units, a systematic sample of persons is selected from a 5-percent sample of persons enrolled in the medical insurance program. The selection of this 5-percent sample is based on the last two digits of the health insurance claim number.

Sample persons are selected for interviews starting in October of each year and remain in the survey for 15 months. This 15-month cycle is determined by the fact that any covered medical expenses incurred by an individual in the last 3 months of a calendar year and applied to the deductible for that year may be carried over and applied to the deductible for the next calendar year.

The sample consists of two groups: (1) a basic group of individuals who would normally remain in the sample for 15 months and (2) a small incremental sample drawn to include persons "aging in" to the universe and added to the sample each month. In addition, for a variety of other purposes, two other samples are selected: (1) a sample of persons who have not enrolled for supplementary medical insurance and (2) a supplementary sample of persons known to have been admitted to the hospital. The sample of non-enrolled persons, like the basic sample, is interviewed once each month for 15 months. The supplementary sample is composed of different persons each month. Only the month(s) of hospitalization and the succeeding month (up to a maximum of 4 months) are included in the interview period of this sample group.

The approximate number of persons included in the sample in each month is:

<u>Sample</u>	<u>Number of Persons</u>
Basic	4,700
Non-enrolled	200
Supplementary	300

Data from these sample persons are collected by means of monthly personal interviews. Interviews, conducted by the Bureau of the Census, provide information about the use of medical care and related services during the preceding month.

The following basic items of information are obtained: name and address of respondent, date and place of physician visits, type of physician, condition treated,

prescriptions filled, and other medical services received, including services received in the hospital, extended care facility, and home, as well as X-rays, medical tests, ambulance services, and the like. Also included are questions relating to the total amount of the bill for each service, the portion not covered by the program, and the source of payment. Where no information on charges is available, an estimating procedure is used that is based on the assumption that charges will be the same for similar services rendered in the same area. Since 1967, information about the characteristics of the sample persons has also been collected, such as age, marital status, and living arrangements. Additional information relating to the supplementary medical insurance program is obtained on an ad hoc basis as required.<sup>1/</sup>

The RRNA tapes confine themselves to sample persons selected for the CMS for panel year 1969 (October 1968-December 1969) who were in the sample in January and in the second, or updated, DR interviews. From the counts (see Exhibits 3 and 4), one can see that this is a sample of 4,567 that includes both SMI enrollees (4,399) and not-enrolled individuals (168); in the 12-month tape, the total sample is also broken down among those with 12 interviews in 1969, those with fewer than 12 because deceased, and those with fewer for miscellaneous reasons. (See variables 2, 47, and 48 in the counts.)

The counts summarize those basic items of data in the CMS and the DR that were selected for the special tapes. There is a set for 12 months and a set for 3 months. Our research mainly utilized the 12-month tape file and drew on the 3-month one sparingly. Differences between the two sets of counts arise essentially because time is a factor in the determination of some statuses, e.g., deductible met.

Regional prices (RP's) are mean charges of physicians for covered services of Medicare Part B carriers, each a

<sup>1/</sup> U.S. Department of Health, Education, and Welfare, Social Security Administration, Office of Research and Statistics, Current Medicare Survey Report, January-December 1969, July 12, 1971, pp. 18-19.

jurisdiction or region. They are computed from statistics in the Reasonable Charge Tabulations which are for types of service, places of service, surgical procedures or physicians' specialties. They are never simple averages of means but weighted averages of means, the weights being the number of services. The year 1969 is the date of the service period for our regional prices; we employed the initial 1969 figures because their update, which occurs when the initial 1970 figures are published, was not available. (See Exhibit 5.)

The full set of RP's comprises

RP1: All places of service  
 RP2: All places of service, general practitioners  
 RP3: All places of service, specialists  
 RP4: Ambulatory services  
 RP5: Home visits  
 RP6: Office visits  
 RP7: Clinic visits  
 RP8: In-hospital services  
 RP9: In-hospital nonsurgical services  
 RP10: In-hospital surgical services  
 RP11: Nursing home services.

Where

Item	Tape variable number	How obtained <sup>a/</sup>
RP1.....	91	Table 2A: <sup>b/</sup> all types of services except other medical services
RP2.....	92	Table 7A: <sup>c/</sup> General practice
RP3.....	93	Table 7A: All selected physicians' specialties except general practice
RP4.....	94	Table 2A: Diagnostic X-ray and diagnostic laboratory; and table 3A: <sup>d/</sup> Office, home and outpatient hospital
RP5.....	95	Table 3A: Home
RP6.....	96	Table 3A: Office
RP7.....	97	Table 3A: Outpatient hospital

continued--

Item	Tape variable number	How obtained <sup>a/</sup>
RP8.....	98	Table 2A: Surgery, anesthesia and assistance at surgery; and table 3A: Inpatient hospital
RP9.....	99	Table 3A: Inpatient hospital
RP10.....	100	Table 2A: Surgery, anesthesia, and assistance at surgery
RP11.....	101	Table 3A: Home and ECF

<sup>a/</sup> The tables referred to are contained in the Reasonable Charge Tabulations.

<sup>b/</sup> Table 2A: Contents -- The total number of services, percent of services allowed charges less than physicians' charges, mean physicians' charge per service, percent reduction of physicians' charge distributed by type of service (medical care, surgery, consultation, diagnostic X-ray, diagnostic laboratory, radiation therapy, anesthesia, assistance at surgery, other medical services) for each year (1966, 1967, 1968, 1969) for each carrier within state and region.

<sup>c/</sup> Table 7A: Contents -- The total number of services, number of services allowed charges less than physicians' charges, percent of allowed services of total services, physicians' charges, mean physicians' charge per service reported, allowed charges, mean allowed charge per service reported and percent reduction of physicians' charges for each year (1966, 1967, 1968, 1969) for each carrier within region and state for selected physicians' specialties (general practice, general surgery, anesthesiology, internal medicine, ophthalmology, orthopedic surgery, radiology, urology, podiatry-surgical chiropody, all other specialties).

<sup>d/</sup> Table 3A: Contents -- The total number of medical care services, percent of services allowed charges less than physicians' charges, mean physicians' charge per service, percent reduction of physicians' charge distributed by place of service (doctor's office, patient's house, inpatient hospital, ECF, outpatient hospital, all other places) for each year (1966, 1967, 1968, 1969) for each carrier within state and region. Table 3A, it should be noted, is a breakdown of the medical care category and not of all types of service.

Sample persons were connected with carriers' regional prices by matching carrier jurisdictions with one or more primary sampling units (PSU's), and the latter with the

sample persons. The PSU of a sample person is recorded with the CMS. Two carriers could share a PSU, but it was always possible to overcome this problem in practice and assign a single set of regional prices to each sample person.

For some 200 sample persons, regional prices could not be generated because of the form in which reasonable charge data were supplied. For instance, the Travelers Insurance Company consolidated data from the several places where it operates as a carrier and presented it for the company.

Two versions of the assignment rate (the "total" and the "net") completed the information in our tape files. Sample persons were joined to assignment rates in just the way outlined for regional prices. The source of the assignment rate is given in appendix B.

The following members of the Division of Health Insurance Studies, Office of Research and Statistics, Social Security Administration, Baltimore, Maryland, either initiated or carried out the preparation of the special tapes:

Aaron Krute (Deputy Director of the Office  
of Research and Statistics)  
Eugene Stickler  
Nathaniel Pigman  
Pasquale Buonsignore  
Marian Moorhead

Mr. Buonsignore supervised the preparation of the tapes. Ms. Moorhead carried out all programming and the actual testing and estimating.

The description of the tapes, i.e., a listing of item names and numbers, where and how they are obtained, etc., as well as the tapes themselves, are with the Office of Research and Statistics and are available only from it.

## II. DEFINITION OF WELFARE STATUS

In the main body of this report (III.C.1) we described an operational definition of insurance status at some length. It is worthwhile to go a bit into the operational definition of welfare status. A sample person was given a status of "some welfare" if:

1. He was a user of services who indicated that welfare helped him to pay for his physicians' bills (note that one would be given this status whether welfare helped him to pay for covered services or for noncovered services); or if he was a user of services who did not so indicate, but was bought in by the state for SMI; this would be disclosed from and checked against the state buy-in code.

2. He was a nonuser of services who was bought in by the state for SMI.

Now, consider the tabulations below:

Case	Using ser- vices <sup>a/</sup>	Checks welfare	State buy-in	Welfare status	Fre- quency	Distribu- tion (%)
12-month tape file						
1....	Yes	Yes	No	Some	382	8
2....	Yes	Yes	Yes	Some	191	4
3....	Yes	No	No	No	3,282	72
4....	Yes	No	Yes	Some	75	2
5....	No	--	No	No	601	13
6....	No	--	Yes	Some	36	1
						100

<sup>a/</sup> Using ambulatory or in-hospital or nursing home services.

Case	Using ser- vices	Checks welfare	State buy-in	Welfare status	Fre- quency	Distribu- tion (%)
	3-month tape file					
1.....					230	5
2.....					169	4
3.....					2,544	56
4.....					22	a/
5.....					1,491	33
6.....					111	2
						100

a/ Less than 1 percent.

Cases 2, 4, and 6 give us the number of state buy-ins, 502; they are 7 percent of the total sample. Cases 1, 2, 4, and 6 give us the number of those with the status "some welfare," 684; they are 15 percent of the sample. "Some welfare" is far from being a sample of individuals bought in by the state, the Medicaid. The availability of welfare to help an aged person to pay for doctors' bills is greater than the state buy-in program.

The definition of welfare status has two parts: one for users of services, the other for nonusers of services. It presents a departure from the definition of insurance status; for, while the latter also has two such parts, one is for users of covered services, and the other is for nonusers of covered services. Naturally, the second set may include some who used noncovered services only. (See variables 4, 5, and 6 in the counts.) There is logically a connection between welfare status and insurance status. "Some welfare" ought to mean that the individual qualifies for an insurance status of either partial or full complementary insurance; alternatively, no complementary insurance ought to rule out his qualifying for welfare status: "some welfare." But, given that the two statuses base themselves on different definitions of utilization, "some welfare" need not always translate into complementary insurance for covered services, and apparent cases of inconsistency between the two statuses could arise. Considering the conditions under which it could happen, the number of such cases has to be (and is) very small; and the inconsistency could indeed be only apparent, i.e., it is not necessarily an error.

For example, a user of noncovered services (only) checks welfare but is not a Medicaid; he is both "some welfare" and "no complementary insurance." Or a user of both covered and noncovered services checks welfare only when he uses noncovered services but is not a Medicaid; again, "some welfare" and "no complementary insurance." "Some welfare" is both socioeconomic attribute and complementary insurance; in certain cases, it is one but not the other, as perhaps it should be. A byproduct of an inconsistency is that the double aspect is made explicit.

FORM CMS-1 (12-69) U.S. DEPARTMENT OF COMMERCE BUREAU OF THE CENSUS ACTING AS COLLECTING AGENT FOR THE SOCIAL SECURITY ADMINISTRATION  <b>CURRENT MEDICARE SURVEY</b>			NOTICE - All information which would permit identification of the individual will be held in strict confidence, will be used only by persons engaged in and for the purposes of the survey and will not be disclosed or released to others for any purpose.			aa. Questionnaire _____ of _____ Questionnaires					
a. PSU <u>3-5</u>			b. Serial No. <u>6-7</u>			c. Survey month <u>11-12</u>			Office Code <u>10 11-12</u>		
d. Sample person (Last name first)						e. Name of interviewer			f. Interviewer's code <u>13-15</u>		
g. ORIGINAL ADDRESS						h. INTERVIEW ADDRESS - If different from original					
House No., street, apartment No., etc. If in institution, give name.						House No., street, apartment No., etc. If in institution, give name.					
City		State		ZIP code		City		State		ZIP code	
i. Person interviewed						j. STATUS OF INTERVIEW					
<input type="checkbox"/> Sample person <u>16</u> <input type="checkbox"/> Proxy (Give name, relationship, and why interviewed)						Interviews: 0 <input type="checkbox"/> Completed 8 <input type="checkbox"/> Started but not finished Non-interviews: 8 <input type="checkbox"/> No one home 8 <input type="checkbox"/> Moved within CMS PSU's but not interviewed (Give address) 8 <input type="checkbox"/> Temporarily absent 8 <input type="checkbox"/> Deceased (Give date) 8 <input type="checkbox"/> Unable to locate 8 <input type="checkbox"/> Refusal (Give reason) 8 <input type="checkbox"/> Moved-Not in CMS PSU's (Give address) 8 <input type="checkbox"/> Other (Specify) <u>7</u> Reasons, comments, and date of death _____ Office code <u>17</u>					
Name _____ Relationship _____											
Why interviewed _____											
<b>QUESTIONS ON MEDICAL CARE</b>											
1. During the month of - - did you stay overnight or longer in a hospital? . . . <input type="checkbox"/> Y → Q1a <input type="checkbox"/> N → Q2 Times (Fill a column of Sec. II for each time, then ask Q2) Code <u>18</u>											
a. How many times during the month of - - were you there? . . . . .											
2. During the month of - - did you stay overnight or longer in a nursing home, sanatorium, rest home or convalescent home? . . . . . <input type="checkbox"/> Y → Q2a <input type="checkbox"/> N → Q3 Times (Fill a column of Sec. III for each time, then ask Q3) Code <u>19</u>											
a. How many times during the month of - - were you there? . . . . .											
3. (Not counting the times you saw a doctor while a patient in a hospital (or similar place) Did you see or telephone any doctors, at any (other) time during the month of - -? . . . . . <input type="checkbox"/> Y → Q3a <input type="checkbox"/> N → Q4 Times (Fill a column of Sec. I for each time, then ask Q4) Code <u>20-21</u>											
a. How many times during the month of - -? . . . . .											
4. Did you see any dentists, optometrists, foot doctors, chiropractors, or any other medical practitioner during the month of - -? . . . . . <input type="checkbox"/> Y → Q4a <input type="checkbox"/> N → Q5 Times (Fill a column of Sec. I for each time, then ask Q5) Code <u>22-23</u>											
a. How many times during the month of - -? . . . . .											
5. (Besides these visits we have talked about) Did you receive treatment from any other medical persons such as a nurse, physical therapist, or similar persons during the month of - -? . . . . . <input type="checkbox"/> Y → Q5a <input type="checkbox"/> N → Q6 Times (Fill a column of Sec. I for each time, then ask Q6) Code <u>24-25</u>											
(Exclude all nursing care while patient in hospital, nursing home, etc., but include private duty nurses in home)											
a. How many times during the month of - -? . . . . .											
6. (In addition to the visits we have talked about) Did you go to a doctor's office or clinic or laboratory for an examination, medical tests, shots or X-rays during the month of - -? . . . . . <input type="checkbox"/> Y → Q6a <input type="checkbox"/> N → Q7 Times (Fill a column of Sec. I for each time, then ask Q7) Code <u>26-27</u>											
a. How many times during the month of - -? . . . . .											
7. (In addition to the visits you have just told me about) Did you have any surgical dressings, splints or casts applied or removed during the month of - -? . . . . . <input type="checkbox"/> Y → Q7a,b <input type="checkbox"/> N → Q8 Times (Fill a column of Sec. IV for each one, then ask Q8) Code <u>28</u>											
a. Which? . . . . . b. How many times? . . . . .											
8. Did you purchase, rent, or have repaired any medical equipment such as a walker, a hospital bed or an oxygen tent during the month of - -? . . . <input type="checkbox"/> Y → Q8a <input type="checkbox"/> N → Q9 Number (Fill a column of Sec. IV for each one, then ask Q9) Code <u>29</u>											
a. Which? . . . . . (Enter number) . . . . .											
(Indicate for each item whether purchased, rented or repaired)											
9. (If Q1-3 and 6 answered No, mark Q9 No, without asking Q9) Did you use an ambulance during the month of - -? . . . . . <input type="checkbox"/> Y → Q9a <input type="checkbox"/> N → Q10 Times (Fill a column of Sec. IV for each time, then ask Q10) Code <u>30</u>											
a. How many times during the month of - -? . . . . .											
10. Not counting prescriptions and medicines, are there any medical items which we haven't talked about that you got during the month of - - , for example, eyeglasses, dentures, hearing aids, or insulin needles? . . . <input type="checkbox"/> Y → Q10a,b <input type="checkbox"/> N → Q11 Number (Fill a column of Sec. IV for each one, then ask Q11) Code <u>31</u>											
a. What were they? . . . . . b. How many items? . . . . .											
11. During the month of - - about how many days did you stay in bed all or most of the day because of any illness or health condition? 0 <input type="checkbox"/> None 1 <input type="checkbox"/> 1-2 days 2 <input type="checkbox"/> 3-7 days 3 <input type="checkbox"/> 8-14 days 4 <input type="checkbox"/> More than 14 days * <u>35</u> - 21											
Footnotes and comments:						CMS-4 for next month		Diary		Office code	
						<input type="checkbox"/> Y <input type="checkbox"/> N		<input type="checkbox"/> Y <input type="checkbox"/> N		IW <u>1-2</u> DED <u>32-33</u>	

Section I - VISITS TO DOCTORS (OR MEDICAL PERSONS) (Fill one column for each visit)									
1. When was the last (next to last, etc.) time you saw (or telephoned) the doctor (medical person)?		① Month <u>13-14</u> Day <u>15-16</u> Code <u>1-07</u>		② Month <u>1-07</u> Day <u>17</u> Code <u>1-07</u>		③ Month <u>1-07</u> Day <u>17</u> Code <u>1-07</u>		④ Month <u>1-07</u> Day <u>17</u> Code <u>1-07</u>	
2. Where did you see the doctor (medical person)?		<input type="checkbox"/> Home <input type="checkbox"/> Clinic <input type="checkbox"/> Telephone <input type="checkbox"/> Office <input type="checkbox"/> Emergency room <input type="checkbox"/> Other (Specify) <u>7</u>		<input type="checkbox"/> Home <input type="checkbox"/> Clinic <input type="checkbox"/> Telephone <input type="checkbox"/> Office <input type="checkbox"/> Emergency room <input type="checkbox"/> Other (Specify) <u>7</u>		<input type="checkbox"/> Home <input type="checkbox"/> Clinic <input type="checkbox"/> Telephone <input type="checkbox"/> Office <input type="checkbox"/> Emergency room <input type="checkbox"/> Other (Specify) <u>7</u>		<input type="checkbox"/> Home <input type="checkbox"/> Clinic <input type="checkbox"/> Telephone <input type="checkbox"/> Office <input type="checkbox"/> Emergency room <input type="checkbox"/> Other (Specify) <u>7</u>	
(If "Clinic" or "Emergency room" give name of hospital or clinic) (If nurse visits home, give name of agency or employer)		Name-Hosp., clinic, agency		Name-Hosp., clinic, agency		Name-Hosp., clinic, agency		Name-Hosp., clinic, agency	
a. What is the name of the doctor (medical person)?		Name of doctor (medical person)		Name of doctor (medical person)		Name of doctor (medical person)		Name of doctor (medical person)	
3. Is Dr. ... a general practitioner, or a surgeon, or a specialist? (Check one or more boxes)		<input type="checkbox"/> Other medical person → Q3b <input type="checkbox"/> General practitioner <input type="checkbox"/> Surgeon → Q3a <input type="checkbox"/> Specialist → Q3b		<input type="checkbox"/> Other medical person → Q3b <input type="checkbox"/> General practitioner <input type="checkbox"/> Surgeon → Q3a <input type="checkbox"/> Specialist → Q3b		<input type="checkbox"/> Other medical person → Q3b <input type="checkbox"/> General practitioner <input type="checkbox"/> Surgeon → Q3a <input type="checkbox"/> Specialist → Q3b		<input type="checkbox"/> Other medical person → Q3b <input type="checkbox"/> General practitioner <input type="checkbox"/> Surgeon → Q3a <input type="checkbox"/> Specialist → Q3b	
a. Is he also a specialist? (If yes, ask Q3b)		Kind		Kind		Kind		Kind	
b. What kind of specialist, (medical person) is he? (if private duty nurse, discontinue column)		Code <u>1-08</u> <u>18-19</u>		Code <u>1-08</u> <u>18-19</u>		Code <u>1-08</u> <u>18-19</u>		Code <u>1-08</u> <u>18-19</u>	
4. For what condition did you see (or telephone) Dr. ... (medical person)?		Condition		Condition		Condition		Condition	
a. What did Dr. ... (medical person) do?		Doctor (medical person) did		Doctor (medical person) did		Doctor (medical person) did		Doctor (medical person) did	
5. Have you received or already paid the bill for this visit?		<input type="checkbox"/> Y → Q5b <input type="checkbox"/> N → Q5c Reason <u>1-10</u> Code <u>22</u>		<input type="checkbox"/> Y → Q5b <input type="checkbox"/> N → Q5c Reason <u>1-10</u> Code <u>22</u>		<input type="checkbox"/> Y → Q5b <input type="checkbox"/> N → Q5c Reason <u>1-10</u> Code <u>22</u>		<input type="checkbox"/> Y → Q5b <input type="checkbox"/> N → Q5c Reason <u>1-10</u> Code <u>22</u>	
a. Why is a bill not expected? (Discontinue column after entering reason)		Q5d → <u>1</u> Dollars <u>3</u> Cents		Q5d → <u>1</u> Dollars <u>3</u> Cents		Q5d → <u>1</u> Dollars <u>3</u> Cents		Q5d → <u>1</u> Dollars <u>3</u> Cents	
b. How much is (was) the bill?		<input type="checkbox"/> DK → Q5c Q5d → <u>2</u> Dollars <u>3</u> Cents		<input type="checkbox"/> DK → Q5c Q5d → <u>2</u> Dollars <u>3</u> Cents		<input type="checkbox"/> DK → Q5c Q5d → <u>2</u> Dollars <u>3</u> Cents		<input type="checkbox"/> DK → Q5c Q5d → <u>2</u> Dollars <u>3</u> Cents	
c. What is your best estimate of the bill (what the bill was)? (If visit was from question 4, page 1, or to that type of person, or by telephone, skip to Q6d)		<input type="checkbox"/> Total → Q6 <input type="checkbox"/> Part not covered → Q5e <input type="checkbox"/> DK → Q6		<input type="checkbox"/> Total → Q6 <input type="checkbox"/> Part not covered → Q5e <input type="checkbox"/> DK → Q6		<input type="checkbox"/> Total → Q6 <input type="checkbox"/> Part not covered → Q5e <input type="checkbox"/> DK → Q6		<input type="checkbox"/> Total → Q6 <input type="checkbox"/> Part not covered → Q5e <input type="checkbox"/> DK → Q6	
d. Is this amount the total bill or just that part not covered by Medicare?		Q6 → <u>3</u> Dollars <u>3</u> Cents		Q6 → <u>3</u> Dollars <u>3</u> Cents		Q6 → <u>3</u> Dollars <u>3</u> Cents		Q6 → <u>3</u> Dollars <u>3</u> Cents	
e. What is the amount of the total bill?		<input type="checkbox"/> DK → Q5f E S T. 4 Dollars <u>3</u> Cents		<input type="checkbox"/> DK → Q5f E S T. 4 Dollars <u>3</u> Cents		<input type="checkbox"/> DK → Q5f E S T. 4 Dollars <u>3</u> Cents		<input type="checkbox"/> DK → Q5f E S T. 4 Dollars <u>3</u> Cents	
f. What is your best estimate of the total bill?		5 <input type="checkbox"/> DK		5 <input type="checkbox"/> DK		5 <input type="checkbox"/> DK		5 <input type="checkbox"/> DK	
If visit was not from question 4, page 1, or to that type of person, and not by telephone, ASK: 6a. For this bill, who will pay the part not covered by Medicare? b. Will anyone else help to pay the part not covered by Medicare? c. (If yes) Who?		If visit was from question 4, page 1, or to that type of person, or by telephone, ASK: d. Who will pay this bill? e. Will anyone else help to pay this bill? f. (If yes) Who?		<input type="checkbox"/> Self or spouse <input type="checkbox"/> Family <input type="checkbox"/> Friends <input type="checkbox"/> Blue Cross <input type="checkbox"/> Blue Shield <input type="checkbox"/> Pvt. Ins. Co. <input type="checkbox"/> Welfare <input type="checkbox"/> Employer <input type="checkbox"/> Union <input type="checkbox"/> Other (Specify) <u>36-38</u> <input type="checkbox"/> No one else		<input type="checkbox"/> Self or spouse <input type="checkbox"/> Family <input type="checkbox"/> Friends <input type="checkbox"/> Blue Cross <input type="checkbox"/> Blue Shield <input type="checkbox"/> Pvt. Ins. Co. <input type="checkbox"/> Welfare <input type="checkbox"/> Employer <input type="checkbox"/> Union <input type="checkbox"/> Other (Specify) <u>36-38</u> <input type="checkbox"/> No one else		<input type="checkbox"/> Self or spouse <input type="checkbox"/> Family <input type="checkbox"/> Friends <input type="checkbox"/> Blue Cross <input type="checkbox"/> Blue Shield <input type="checkbox"/> Pvt. Ins. Co. <input type="checkbox"/> Welfare <input type="checkbox"/> Employer <input type="checkbox"/> Union <input type="checkbox"/> Other (Specify) <u>36-38</u> <input type="checkbox"/> No one else	
Footnotes and comments		Footnotes for this column		CMS-4 items		Footnotes for this column		CMS-4 items	
Code		Code		Code		Code		Code	

Section I - VISITS TO DOCTORS (OR MEDICAL PERSONS) - Continued (Fill one column for each visit)											
③			④			⑤			⑥		
Month	Day	Code	Month	Day	Code	Month	Day	Code	Month	Day	Code
1 <input type="checkbox"/> Home	2 <input type="checkbox"/> Office		1 <input type="checkbox"/> Home	2 <input type="checkbox"/> Office		1 <input type="checkbox"/> Home	2 <input type="checkbox"/> Office		1 <input type="checkbox"/> Home	2 <input type="checkbox"/> Office	
3 <input type="checkbox"/> Clinic	4 <input type="checkbox"/> Emergency room		3 <input type="checkbox"/> Clinic	4 <input type="checkbox"/> Emergency room		3 <input type="checkbox"/> Clinic	4 <input type="checkbox"/> Emergency room		3 <input type="checkbox"/> Clinic	4 <input type="checkbox"/> Emergency room	
7 <input type="checkbox"/> Telephone	<input type="checkbox"/> Other (Specify) <input type="checkbox"/>		7 <input type="checkbox"/> Telephone	<input type="checkbox"/> Other (Specify) <input type="checkbox"/>		7 <input type="checkbox"/> Telephone	<input type="checkbox"/> Other (Specify) <input type="checkbox"/>		7 <input type="checkbox"/> Telephone	<input type="checkbox"/> Other (Specify) <input type="checkbox"/>	
Name - Hosp., clinic, agency		Code	Name - Hosp., clinic, agency		Code	Name - Hosp., clinic, agency		Code	Name - Hosp., clinic, agency		Code
Name of doctor (medical person)			Name of doctor (medical person)			Name of doctor (medical person)			Name of doctor (medical person)		
<input type="checkbox"/> Other medical person → Q3b <input type="checkbox"/> General practitioner <input type="checkbox"/> Surgeon → Q3a <input type="checkbox"/> Specialist → Q3b			<input type="checkbox"/> Other medical person → Q3b <input type="checkbox"/> General practitioner <input type="checkbox"/> Surgeon → Q3a <input type="checkbox"/> Specialist → Q3b			<input type="checkbox"/> Other medical person → Q3b <input type="checkbox"/> General practitioner <input type="checkbox"/> Surgeon → Q3a <input type="checkbox"/> Specialist → Q3b			<input type="checkbox"/> Other medical person → Q3b <input type="checkbox"/> General practitioner <input type="checkbox"/> Surgeon → Q3a <input type="checkbox"/> Specialist → Q3b		
Kind		Code	Kind		Code	Kind		Code	Kind		Code
Condition		Code	Condition		Code	Condition		Code	Condition		Code
Doctor (medical person) did			Doctor (medical person) did			Doctor (medical person) did			Doctor (medical person) did		
1 <input type="checkbox"/> Y → Q5b 3 <input type="checkbox"/> Bill not expected → Q5a 2 <input type="checkbox"/> N → Q5c			1 <input type="checkbox"/> Y → Q5b 3 <input type="checkbox"/> Bill not expected → Q5a 2 <input type="checkbox"/> N → Q5c			1 <input type="checkbox"/> Y → Q5b 3 <input type="checkbox"/> Bill not expected → Q5a 2 <input type="checkbox"/> N → Q5c			1 <input type="checkbox"/> Y → Q5b 3 <input type="checkbox"/> Bill not expected → Q5a 2 <input type="checkbox"/> N → Q5c		
Reason		Code	Reason		Code	Reason		Code	Reason		Code
Q5d ← 1 Dollars Cents <input type="checkbox"/> DK → Q5c			Q5d ← 1 Dollars Cents <input type="checkbox"/> DK → Q5c			Q5d ← 1 Dollars Cents <input type="checkbox"/> DK → Q5c			Q5d ← 1 Dollars Cents <input type="checkbox"/> DK → Q5c		
E Q5d ← S 2 Dollars Cents T.			E Q5d ← S 2 Dollars Cents T.			E Q5d ← S 2 Dollars Cents T.			E Q5d ← S 2 Dollars Cents T.		
3 <input type="checkbox"/> DK → Q6 1 <input type="checkbox"/> Total → Q6 <input type="checkbox"/> Part not covered → Q5e 2 <input type="checkbox"/> DK → Q6			3 <input type="checkbox"/> DK → Q6 1 <input type="checkbox"/> Total → Q6 <input type="checkbox"/> Part not covered → Q5e 2 <input type="checkbox"/> DK → Q6			3 <input type="checkbox"/> DK → Q6 1 <input type="checkbox"/> Total → Q6 <input type="checkbox"/> Part not covered → Q5e 2 <input type="checkbox"/> DK → Q6			3 <input type="checkbox"/> DK → Q6 1 <input type="checkbox"/> Total → Q6 <input type="checkbox"/> Part not covered → Q5e 2 <input type="checkbox"/> DK → Q6		
Q6 ← 3 Dollars Cents <input type="checkbox"/> DK → Q5f			Q6 ← 3 Dollars Cents <input type="checkbox"/> DK → Q5f			Q6 ← 3 Dollars Cents <input type="checkbox"/> DK → Q5f			Q6 ← 3 Dollars Cents <input type="checkbox"/> DK → Q5f		
E S 4 Dollars Cents T.			E S 4 Dollars Cents T.			E S 4 Dollars Cents T.			E S 4 Dollars Cents T.		
5 <input type="checkbox"/> DK			5 <input type="checkbox"/> DK			5 <input type="checkbox"/> DK			5 <input type="checkbox"/> DK		
1 <input type="checkbox"/> Self or spouse 2 <input type="checkbox"/> Family 3 <input type="checkbox"/> Friends 4 <input type="checkbox"/> Blue Cross Blue Shield			1 <input type="checkbox"/> Self or spouse 2 <input type="checkbox"/> Family 3 <input type="checkbox"/> Friends 4 <input type="checkbox"/> Blue Cross Blue Shield			1 <input type="checkbox"/> Self or spouse 2 <input type="checkbox"/> Family 3 <input type="checkbox"/> Friends 4 <input type="checkbox"/> Blue Cross Blue Shield			1 <input type="checkbox"/> Self or spouse 2 <input type="checkbox"/> Family 3 <input type="checkbox"/> Friends 4 <input type="checkbox"/> Blue Cross Blue Shield		
4 <input type="checkbox"/> Pvt. Ins. Co. 5 <input type="checkbox"/> Welfare 6 <input type="checkbox"/> Employer 7 <input type="checkbox"/> Union Other (Specify) <input type="checkbox"/>			4 <input type="checkbox"/> Pvt. Ins. Co. 5 <input type="checkbox"/> Welfare 6 <input type="checkbox"/> Employer 7 <input type="checkbox"/> Union Other (Specify) <input type="checkbox"/>			4 <input type="checkbox"/> Pvt. Ins. Co. 5 <input type="checkbox"/> Welfare 6 <input type="checkbox"/> Employer 7 <input type="checkbox"/> Union Other (Specify) <input type="checkbox"/>			4 <input type="checkbox"/> Pvt. Ins. Co. 5 <input type="checkbox"/> Welfare 6 <input type="checkbox"/> Employer 7 <input type="checkbox"/> Union Other (Specify) <input type="checkbox"/>		
<input type="checkbox"/> No one else			<input type="checkbox"/> No one else			<input type="checkbox"/> No one else			<input type="checkbox"/> No one else		
Footnotes and comments		CMS-4 items	Footnotes for this column		CMS-4 items	Footnotes for this column		CMS-4 items	Footnotes for this column		CMS-4 items
		Code			Code			Code			Code

Section II - HOSPITAL STAYS OVERNIGHT OR LONGER			
1. What is the name and address of the hospital?		Name  Street  City & State	
Code	Code 23	<b>INSTRUCTIONS</b>  Fill column 1, questions 1-6 for hospital stay. Fill questions 7-11 in a separate column for each doctor reported in Q6. If there were two hospital stays during the month, fill a second questionnaire; if three stays, a third questionnaire, etc.	
2. When did you enter the hospital?			
3. When did you leave the hospital?			
4. Why did you go to the hospital?		Reason  CMS 4 Column      Item	
If not specified in Q4, ASK: 5. Did you have an operation while you were in the hospital during the month of --?		<input type="checkbox"/> Shown in Q4 (Enter kind in Q5a) → Q5b 1 <input type="checkbox"/> Y → Q5a,b      2 <input type="checkbox"/> N → Q6 Kind Month      Day Number of doctors	
a. What kind of operation was it?  b. What was the date of the operation?		Code 26-27 2-15 28	
6. How many doctors treated you (during the month of --) while you were in the hospital?		INSTRUCTIONS: FILL QUESTIONS 7-11 FOR EACH DOCTOR REPORTED IN Q6, THEN GO TO INTERVIEWER CHECK ITEM	
7. What was (were) the doctor's (doctors') name(s)? (Enter name of each doctor in separate column before completing any column)		① Name of doctor ② Name of doctor	
8. How many times did Dr. . . . see you (during the month of --) while you were in the hospital?		Number of times 29-30	
9. Is Dr. . . . a general practitioner, or a surgeon, or a specialist? (Check one or more boxes) . . . . . a. Is he also a specialist? (If yes, ask Q9b) b. What kind of specialist is he?		01 <input type="checkbox"/> GP <input type="checkbox"/> Specialist → Q9b <input type="checkbox"/> Surgeon → Q9a Kind Code 2-17 31-32	
10. Have you received or already paid the bill from Dr. . . . for the time you were in the hospital (for the month of --)? . . . . . a. Why is a bill not expected? (Discontinue column after entering reason) b. How much is (was) the bill? c. What is your best estimate of the bill (what the bill was)? d. Is this amount the total bill or just that part not covered by Medicare? e. What is the amount of the total bill? f. What is your best estimate of the total bill?		1 <input type="checkbox"/> Y → Q10b    3 <input type="checkbox"/> Bill not expected → Q10a 2 <input type="checkbox"/> N → Q10c Reason Code 2-19 34-35 Dollars      Cents Q10d → 1 \$ 37-40 <input type="checkbox"/> DK → Q10c Q10d → 2 Dollars      Cents \$ <input type="checkbox"/> DK → Q11 1 <input type="checkbox"/> Total → Q11    2-22 <input type="checkbox"/> Part not covered → Q10e 2 <input type="checkbox"/> DK → Q11 Q11 → 3 Dollars      Cents \$ 42-45 <input type="checkbox"/> DK → Q10f E S T. Dollars      Cents \$ 5 <input type="checkbox"/> DK → Q11	
11. For this bill, who will pay for the part not covered by Medicare? a. Will anyone else help to pay the part not covered by Medicare? b. (If yes) Who?		1 <input type="checkbox"/> Self or spouse    4 <input type="checkbox"/> Pvt. Ins. Co. 2 <input type="checkbox"/> Family          5 <input type="checkbox"/> Welfare 3 <input type="checkbox"/> Friends          6 <input type="checkbox"/> Employer 4 <input type="checkbox"/> Blue Cross      7 <input type="checkbox"/> Union Blue Shield      Other (Specify) 2-24 47-49 <input type="checkbox"/> No one else	

## Section II - HOSPITAL STAYS OVERNIGHT OR LONGER - Continued

## INTERVIEWER CHECK

A. Was there an operation?

☐ Y → QB☐ N

B. Have you identified a doctor as an anesthetist in a column below?

☐ YES → Doctor in column \_\_\_\_ is identified as anesthetist.☐ NO → Add a column to identify the anesthetist or give the reason why one doesn't need to be added.(a) ☐ Column \_\_\_\_ added for anesthetist (b) ☐ Doctor in Column \_\_\_\_ was also the anesthetist(c) ☐ Nurse was anesthetist (d) ☐ No anesthetist used (e) ☐ Other (Specify) \_\_\_\_\_

Footnotes and comments

INSTRUCTIONS: FILL QUESTIONS 7-11 FOR EACH DOCTOR REPORTED IN Q6, THEN GO TO INTERVIEWER CHECK ITEM

③ Name of doctor	④ Name of doctor	⑤ Name of doctor	⑥ Name of doctor
Number of times	Number of times	Number of times	Number of times
01 <input type="checkbox"/> GP <input type="checkbox"/> Specialist → Q9b <input type="checkbox"/> Surgeon → Q9a	01 <input type="checkbox"/> GP <input type="checkbox"/> Specialist → Q9b <input type="checkbox"/> Surgeon → Q9a	01 <input type="checkbox"/> GP <input type="checkbox"/> Specialist → Q9b <input type="checkbox"/> Surgeon → Q9a	01 <input type="checkbox"/> GP <input type="checkbox"/> Specialist → Q9b <input type="checkbox"/> Surgeon → Q9a
Kind Code	Kind Code	Kind Code	Kind Code
1 <input type="checkbox"/> Y → Q10b 3 <input type="checkbox"/> Bill not expected → Q10a 2 <input type="checkbox"/> N → Q10c	1 <input type="checkbox"/> Y → Q10b 3 <input type="checkbox"/> Bill not expected → Q10a 2 <input type="checkbox"/> N → Q10c	1 <input type="checkbox"/> Y → Q10b 3 <input type="checkbox"/> Bill not expected → Q10a 2 <input type="checkbox"/> N → Q10c	1 <input type="checkbox"/> Y → Q10b 3 <input type="checkbox"/> Bill not expected → Q10a 2 <input type="checkbox"/> N → Q10c
Reason Code	Reason Code	Reason Code	Reason Code
Q10d ← 1 Dollars Cents \$	Q10d ← 1 Dollars Cents \$	Q10d ← 1 Dollars Cents \$	Q10d ← 1 Dollars Cents \$
<input type="checkbox"/> DK → Q10c	<input type="checkbox"/> DK → Q10c	<input type="checkbox"/> DK → Q10c	<input type="checkbox"/> DK → Q10c
Q10d ← E S 2 Dollars Cents T. \$	Q10d ← E S 2 Dollars Cents T. \$	Q10d ← E S 2 Dollars Cents T. \$	Q10d ← E S 2 Dollars Cents T. \$
3 <input type="checkbox"/> DK → Q11	3 <input type="checkbox"/> DK → Q11	3 <input type="checkbox"/> DK → Q11	3 <input type="checkbox"/> DK → Q11
1 <input type="checkbox"/> Total → Q11 2 <input type="checkbox"/> Part not covered → Q10e 2 <input type="checkbox"/> DK → Q11	1 <input type="checkbox"/> Total → Q11 2 <input type="checkbox"/> Part not covered → Q10e 2 <input type="checkbox"/> DK → Q11	1 <input type="checkbox"/> Total → Q11 2 <input type="checkbox"/> Part not covered → Q10e 2 <input type="checkbox"/> DK → Q11	1 <input type="checkbox"/> Total → Q11 2 <input type="checkbox"/> Part not covered → Q10e 2 <input type="checkbox"/> DK → Q11
Q11 ← 3 Dollars Cents \$	Q11 ← 3 Dollars Cents \$	Q11 ← 3 Dollars Cents \$	Q11 ← 3 Dollars Cents \$
<input type="checkbox"/> DK → Q10f	<input type="checkbox"/> DK → Q10f	<input type="checkbox"/> DK → Q10f	<input type="checkbox"/> DK → Q10f
E S 4 Dollars Cents T. \$	E S 4 Dollars Cents T. \$	E S 4 Dollars Cents T. \$	E S 4 Dollars Cents T. \$
5 <input type="checkbox"/> DK → Q11	5 <input type="checkbox"/> DK → Q11	5 <input type="checkbox"/> DK → Q11	5 <input type="checkbox"/> DK → Q11
1 <input type="checkbox"/> Self or spouse 2 <input type="checkbox"/> Family 3 <input type="checkbox"/> Friends 4 <input type="checkbox"/> Blue Cross Blue Shield	1 <input type="checkbox"/> Self or spouse 2 <input type="checkbox"/> Family 3 <input type="checkbox"/> Friends 4 <input type="checkbox"/> Blue Cross Blue Shield	1 <input type="checkbox"/> Self or spouse 2 <input type="checkbox"/> Family 3 <input type="checkbox"/> Friends 4 <input type="checkbox"/> Blue Cross Blue Shield	1 <input type="checkbox"/> Self or spouse 2 <input type="checkbox"/> Family 3 <input type="checkbox"/> Friends 4 <input type="checkbox"/> Blue Cross Blue Shield
4 <input type="checkbox"/> Pvt. Ins. Co. 5 <input type="checkbox"/> Welfare 6 <input type="checkbox"/> Employer 7 <input type="checkbox"/> Union Other (Specify) →	4 <input type="checkbox"/> Pvt. Ins. Co. 5 <input type="checkbox"/> Welfare 6 <input type="checkbox"/> Employer 7 <input type="checkbox"/> Union Other (Specify) →	4 <input type="checkbox"/> Pvt. Ins. Co. 5 <input type="checkbox"/> Welfare 6 <input type="checkbox"/> Employer 7 <input type="checkbox"/> Union Other (Specify) →	4 <input type="checkbox"/> Pvt. Ins. Co. 5 <input type="checkbox"/> Welfare 6 <input type="checkbox"/> Employer 7 <input type="checkbox"/> Union Other (Specify) →
<input type="checkbox"/> No one else	<input type="checkbox"/> No one else	<input type="checkbox"/> No one else	<input type="checkbox"/> No one else

DON'T FORGET INTERVIEWER CHECK

Section III - NURSING HOME, SANITARIUM OR SIMILAR PLACE					
1. What is the name and address of the place? .....  <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <div style="border: 1px solid black; width: 100%; height: 20px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 20px; margin-bottom: 5px;"></div> </div> <div style="width: 50%;"> <div style="border: 1px solid black; width: 100%; height: 20px; margin-bottom: 5px;"></div> <div style="border: 1px solid black; width: 100%; height: 20px; margin-bottom: 5px;"></div> </div> </div>		Name of Place  Street  City & State  Year    Month    Day  Month    Day <input type="checkbox"/> Still There		<div style="text-align: center; font-weight: bold;">INSTRUCTIONS</div> Fill column 1, questions 1-5 for nursing home (sanitarium) stay. Fill questions 6-10 for each doctor reported in Q5. If there were two nursing home (sanitarium) stays during the month, fill a second questionnaire, if three stays, a third questionnaire, etc.	
2. When did you enter the nursing home (sanitarium)? .....		Code    Year    Month    Day			
3. When did you leave the nursing home (sanitarium)? .....		Code    Month    Day <input type="checkbox"/> Still There			
4. Were you in the nursing home (sanitarium) because you were recovering from some illness or operation? .....  a. What kind of health problem did you have which made you go there?  b. What was the reason you were there? .....		1 <input type="checkbox"/> Y → Q4a    2 <input type="checkbox"/> N → Q4b    Code Kind → Q5 Reason			
5. While you were there (during the month of --), how many doctors saw or talked to you either for examination, treatment or advice?		Number of doctors    0 <input type="checkbox"/> None			
INSTRUCTIONS: FILL QUESTIONS 6 THROUGH 10 FOR EACH DOCTOR REPORTED IN Q5					
6. What was (were) the doctor's (doctors') name(s)? (Enter name of each doctor in a separate column before filling any column)		① Name of doctor		② Name of doctor	
7. How many times did Dr. ... see you while you were there (during the month of --)?		Number of times		Number of times	
8. Is Dr. ... a general practitioner, or a surgeon or a specialist? ..... (Check one or more boxes) a. Is he also a specialist? (If yes, ask Q8b) b. What kind of specialist is he? .....		0 <input type="checkbox"/> GP <input type="checkbox"/> Specialist → Q8b <input type="checkbox"/> Surgeon → Q8a Kind    Code		0 <input type="checkbox"/> GP <input type="checkbox"/> Specialist → Q8b <input type="checkbox"/> Surgeon → Q8a Kind    Code	
9. Have you received or already paid the bill from Dr. ... for the time you were there (during the month of --)? .....  a. Why is a bill not expected? ..... (Discontinue column after entering reason)  b. How much is (was) the bill? .....  c. What is your best estimate of the bill (what the bill was)? .....  If amount reported in Q9b, or estimated in Q9c, ASK: d. Is this amount the total bill or just that part not covered by Medicare? .....  e. What is the amount of the total bill? .....  f. What is your best estimate of the total bill? .....		1 <input type="checkbox"/> Y → Q9b    3 <input type="checkbox"/> Bill not expected → Q9a 2 <input type="checkbox"/> N → Q9c Reason    Code  Q9d → 1    Dollars    Cents \$ <input type="checkbox"/> DK → Q9c  F    Dollars    Cents Q9d → S 2    \$ T. 3 <input type="checkbox"/> DK → Q10 1 <input type="checkbox"/> Total → Q10 <input type="checkbox"/> Part not covered → Q9e 2 <input type="checkbox"/> DK → Q10  Q10 → 3    Dollars    Cents \$ <input type="checkbox"/> DK → Q9f  F    Dollars    Cents S 4    \$ T. 5 <input type="checkbox"/> DK		1 <input type="checkbox"/> Y → Q9b    3 <input type="checkbox"/> Bill not expected → Q9a 2 <input type="checkbox"/> N → Q9c Reason    Code  Q9d → 1    Dollars    Cents \$ <input type="checkbox"/> DK → Q9c  F    Dollars    Cents Q9d → S 2    \$ T. 3 <input type="checkbox"/> DK → Q10 1 <input type="checkbox"/> Total → Q10 <input type="checkbox"/> Part not covered → Q9e 2 <input type="checkbox"/> DK → Q10  Q10 → 3    Dollars    Cents \$ <input type="checkbox"/> DK → Q9f  E    Dollars    Cents S 4    \$ T. 5 <input type="checkbox"/> DK	
10. For this bill, who will pay the part not covered by Medicare? ..... a. Will anyone else help to pay the part not covered by Medicare? b. (If yes) Who?		1 <input type="checkbox"/> Self or spouse    4 <input type="checkbox"/> Pvt. Ins. Co. 2 <input type="checkbox"/> Family    5 <input type="checkbox"/> Welfare 3 <input type="checkbox"/> Friends    6 <input type="checkbox"/> Employer 4 <input type="checkbox"/> Blue Cross    7 <input type="checkbox"/> Union Blue Shield    Other (Specify) <input type="checkbox"/> <input type="checkbox"/> No one else		1 <input type="checkbox"/> Self or spouse    4 <input type="checkbox"/> Pvt. Ins. Co. 2 <input type="checkbox"/> Family    5 <input type="checkbox"/> Welfare 3 <input type="checkbox"/> Friends    6 <input type="checkbox"/> Employer 4 <input type="checkbox"/> Blue Cross    7 <input type="checkbox"/> Union Blue Shield    Other (Specify) <input type="checkbox"/> <input type="checkbox"/> No one else	
Footnotes and comments		Footnotes for this column    CMS-4 items		Footnotes for this column    CMS-4 items	

Section IV - MEDICAL SERVICES, EQUIPMENT, AMBULANCE, ETC. (Fill one column for each)			
Interviewer: Write in kind of services, equipment, etc.	① Kind	Code	② Kind
1. When did you get (rent or have repaired) . . . (use an ambulance)?	Month	Day	Month
2. Have you received or already paid the bill for this . . . ?	1 <input type="checkbox"/> Y → Q2b    3 <input type="checkbox"/> Bill not expected → Q2e 2 <input type="checkbox"/> N → Q2c Reason _____ Code _____	1 <input type="checkbox"/> Y → Q2b    3 <input type="checkbox"/> Bill not expected → Q2e 2 <input type="checkbox"/> N → Q2c Reason _____ Code _____	1 <input type="checkbox"/> Y → Q2b    3 <input type="checkbox"/> Bill not expected → Q2e 2 <input type="checkbox"/> N → Q2c Reason _____ Code _____
a. Why is a bill not expected? . . . . . <i>(Discontinue column after entering reason)</i>	Q2d ← 1 Dollars Cents <input type="checkbox"/> DK → Q2c	Q2d ← 1 Dollars Cents <input type="checkbox"/> DK → Q2c	Q2d ← 1 Dollars Cents <input type="checkbox"/> DK → Q2c
b. How much is (was) the bill? . . . . .	E S T. 2 Dollars Cents <input type="checkbox"/> DK → Q3	E S T. 2 Dollars Cents <input type="checkbox"/> DK → Q3	E S T. 2 Dollars Cents <input type="checkbox"/> DK → Q3
c. What is your best estimate of the bill (what the bill was)? . . . . . <i>(If items are eyeglasses, dentures or hearing aids, skip to Q3d)</i>	1 <input type="checkbox"/> Total → Q3 <input type="checkbox"/> Part not covered 2 <input type="checkbox"/> DK → Q3	1 <input type="checkbox"/> Total → Q3 <input type="checkbox"/> Part not covered 2 <input type="checkbox"/> DK → Q3	1 <input type="checkbox"/> Total → Q3 <input type="checkbox"/> Part not covered 2 <input type="checkbox"/> DK → Q3
<i>If amount reported in Q2b, or estimated in Q2c, ASK:</i> d. Is this amount the total bill or just that part not covered by Medicare? . . . . .	Q3 ← 3 Dollars Cents <input type="checkbox"/> DK → Q2f	Q3 ← 3 Dollars Cents <input type="checkbox"/> DK → Q2f	Q3 ← 3 Dollars Cents <input type="checkbox"/> DK → Q2f
e. What is the amount of the total bill? . . . . .	E S T. 4 Dollars Cents 5 <input type="checkbox"/> DK	E S T. 4 Dollars Cents 5 <input type="checkbox"/> DK	E S T. 4 Dollars Cents 5 <input type="checkbox"/> DK
<i>If items are other than eyeglasses, dentures or hearing aids, ASK:</i> 3a. For this bill, who will pay the part not covered by Medicare? b. Will anyone else help pay the part not covered by Medicare? c. (If yes) Who?	<i>If items are eyeglasses, dentures or hearing aids ASK:</i> d. Who will pay this bill? e. Will anyone else help to pay this bill? f. (If yes) Who?	1 <input type="checkbox"/> Self or spouse 2 <input type="checkbox"/> Family 3 <input type="checkbox"/> Friends 4 <input type="checkbox"/> Blue Cross Blue Shield <input type="checkbox"/> No one else	4 <input type="checkbox"/> Pvt. Ins. Co. 5 <input type="checkbox"/> Welfare 6 <input type="checkbox"/> Employer 7 <input type="checkbox"/> Union <input type="checkbox"/> Other (Specify) →
Footnotes and comments	Footnotes for this column	CMS-4 items Code	Footnotes for this column CMS-4 items Code

## Section V - PRESCRIPTION MEDICINES

Now we have some questions about prescription medicines,

1. During the month of -- did you get any medicine prescribed by a doctor? ..... ☐ Yes → Q1a ☐ No → Q2a. How many prescriptions did you get in -- ? ..... 

Number

b. For what condition(s)? (Enter in column B of table, then ask Q2)

2. (Besides the prescriptions you have already told me about), during the month of -- did you get any medicine from a pharmacist or drug store that was prescribed by a telephone call from a doctor? ..... ☐ Yes → Q2a ☐ No → Q3a. How many prescriptions of this kind did you get in -- ? ..... 

Number

b. For what condition(s)? (Enter in column B of table, then ask Q3)

3. (Besides the prescriptions you have already told me about), during the month of -- did you have any prescriptions refilled? ..... ☐ Yes → Q3a ☐ No → Q4a. How many refills did you get in -- ? ..... 

Number

b. For what condition(s)? (Enter in column B of table then ask Q4)

4. (Beside the prescriptions you have already told me about), during the month of -- did you get any medicine directly from a doctor? ..... ☐ Yes → Q4a ☐ No → Aa. How many times did you get medicine from a doctor in -- ? ..... 

Number

b. For what condition(s)? (Enter in column B of table, then fill out Item A)

A. Interviewer: Enter the total number of prescriptions from 1a, 2a, 3a and 4a. If no prescriptions, enter zero (0) and end interview, or go to Section VI if applicable. 

Code

TOTAL

TABLE FOR PRESCRIPTIONS (Fill one line for each prescription in Item A)

Code	B. Enter conditions	Q. No.	Code	5. What is the number of the prescription for... medicine?	6. What DAY was it filled?	7. How much did it cost? (Dollars and cents)	8. Who paid (will pay) for it?
	1.			<input type="checkbox"/> No number <input type="checkbox"/> DK	Code	\$ Cents <input type="checkbox"/> Bill not received (Explain)	<input type="checkbox"/> Self or spouse <input type="checkbox"/> Other (Specify)
	2.			<input type="checkbox"/> No number <input type="checkbox"/> DK	Code	\$ Cents <input type="checkbox"/> Bill not received (Explain)	<input type="checkbox"/> Self or spouse <input type="checkbox"/> Other (Specify)
	3.			<input type="checkbox"/> No number <input type="checkbox"/> DK	Code	\$ Cents <input type="checkbox"/> Bill not received (Explain)	<input type="checkbox"/> Self or spouse <input type="checkbox"/> Other (Specify)
	4.			<input type="checkbox"/> No number <input type="checkbox"/> DK	Code	\$ Cents <input type="checkbox"/> Bill not received (Explain)	<input type="checkbox"/> Self or spouse <input type="checkbox"/> Other (Specify)
	5.			<input type="checkbox"/> No number <input type="checkbox"/> DK	Code	\$ Cents <input type="checkbox"/> Bill not received (Explain)	<input type="checkbox"/> Self or spouse <input type="checkbox"/> Other (Specify)
	6.			<input type="checkbox"/> No number <input type="checkbox"/> DK	Code	\$ Cents <input type="checkbox"/> Bill not received (Explain)	<input type="checkbox"/> Self or spouse <input type="checkbox"/> Other (Specify)
	7.			<input type="checkbox"/> No number <input type="checkbox"/> DK	Code	\$ Cents <input type="checkbox"/> Bill not received (Explain)	<input type="checkbox"/> Self or spouse <input type="checkbox"/> Other (Specify)
	8.			<input type="checkbox"/> No number <input type="checkbox"/> DK	Code	\$ Cents <input type="checkbox"/> Bill not received (Explain)	<input type="checkbox"/> Self or spouse <input type="checkbox"/> Other (Specify)
	9.			<input type="checkbox"/> No number <input type="checkbox"/> DK	Code	\$ Cents <input type="checkbox"/> Bill not received (Explain)	<input type="checkbox"/> Self or spouse <input type="checkbox"/> Other (Specify)

Interviewer check: (If any medicines received directly from a doctor) ASK:

9.a. Which of the medicines you got from a doctor did he give you without charge? ..... Line number(s): ..... ☐ Noneb. Which of the medicines you got from a doctor did he charge you for? ..... Line number(s): ..... ☐ None

Footnotes and comments

CMS4

Item Line

## Section VI - MEDICAL EXPENSES REPORT (To be asked for the October Survey month, for the first month of B2 cases, and when specified by Office)

1. About how much do you think was the total of your bills for doctors and other medical services for the period from -- through -- ? ..... 

Dollars Cents

☐ DK → Q2  
(Exclude any charges for hospital room and board or prescription medicines)  
If \$50.00 or less → STOP  
If more than \$50.00 → Q42. Do you think that the bills total more than \$50.00? ..... ☐ Y → Q4 ☐ N → Q3 ☐ DK → Q33. Could you estimate how much the bills were? ..... 

Dollars Cents

☐ DK → STOP4. Have any of these bills been sent to Medicare either by you or someone else? ..... 4 ☐ Y 5 ☐ N 6 ☐ DK

FORM CMS-10  
(9-71)

## DEMOGRAPHIC RECORD

U.S. DEPARTMENT OF COMMERCE  
BUREAU OF THE CENSUS

## Section A - IDENTIFICATION

1. Name of sample person . . . .	Last name	First name	PSU	Serial number	Data Collection Center
2a. Address where interviewed . .	Number and street		City	State	ZIP code
2b. Is this your usual place of residence? . . . . .	Yes → 3 1 <input type="checkbox"/> a 1 <input type="checkbox"/> b		No → 2c 2 <input type="checkbox"/> a 2 <input type="checkbox"/> b		
2c. What is your usual place of residence? . . . . .	Number and street		City	State	ZIP code

TO INTERVIEWER: 3. Mark size of place where interviewed:

In a suburb near a large city	1 <input type="checkbox"/> a 1 <input type="checkbox"/> b	In a medium size city (50,000-250,000)	3 <input type="checkbox"/> a 3 <input type="checkbox"/> b	In a town or village (under 2,500)	5 <input type="checkbox"/> a 5 <input type="checkbox"/> b
In a large city (250,000 or more)	2 <input type="checkbox"/> a 2 <input type="checkbox"/> b	In a small city (2,500-50,000)	4 <input type="checkbox"/> a 4 <input type="checkbox"/> b	In open country but not on a farm	6 <input type="checkbox"/> a 6 <input type="checkbox"/> b
				On a farm	7 <input type="checkbox"/> a 7 <input type="checkbox"/> b

TO INTERVIEWER: 4. Mark kind of place where sample person is currently living:

Private home or apartment	1 <input type="checkbox"/> a 1 <input type="checkbox"/> b	Nursing home, sanitarium, rest home, or convalescent home	3 <input type="checkbox"/> a 3 <input type="checkbox"/> b	Other (Specify) _____	5 <input type="checkbox"/> a 5 <input type="checkbox"/> b
Rooming house, hotel, or motel	2 <input type="checkbox"/> a 2 <input type="checkbox"/> b	Long-term Hospital	4 <input type="checkbox"/> a 4 <input type="checkbox"/> b		

## Section B - HOUSEHOLD INFORMATION

Line Number code	(5)	(6)	code	Mo.	Day	Yr.	(8)	(9)	code	(10)	Yr.	Line Number	Changes in Household Composition and Date of Change		
													(11)	Mo.	Yr.
1												1			
2												2			
3												3			
4												4			
5												5			
6												6			
7												7			

## Section C - SAMPLE PERSON

Do Not Write in Code Boxes

MARK: <input type="checkbox"/> Male sample person → 12-19 OR <input type="checkbox"/> Female sample person → 13-19		1	2	3	4	5	6	7	8	9	10
12a. Did you ever serve in the Armed Forces of the United States? <input type="checkbox"/> Yes → 12b 2 <input type="checkbox"/> No → 13											
b. When did you serve? (Mark as many as apply)											
3 <input type="checkbox"/> Korean War (6/1950 - 1/1955) 4 <input type="checkbox"/> World War II (9/1940 - 7/1947) 5 <input type="checkbox"/> World War I (4/1917 - 11/1918) 6 <input type="checkbox"/> Spanish-American War (4/1898 - 7/1903) 7 <input type="checkbox"/> Peace time only											
13. What is the highest grade (or year) of regular school you ever attended?											
1 <input type="checkbox"/> Never attended 2 <input type="checkbox"/> 1-6 grades 3 <input type="checkbox"/> 7-8 grades 4 <input type="checkbox"/> 1-4 years high school 5 <input type="checkbox"/> 1 or more years of college											
14. Which of the following statements fits you best in terms of health?											
Must stay in bed all or most of the time 1 <input type="checkbox"/> a 1 <input type="checkbox"/> b Need the help of another person in getting around 3 <input type="checkbox"/> a 3 <input type="checkbox"/> b Do not need the help of another person or special aid but has trouble getting around 5 <input type="checkbox"/> a 5 <input type="checkbox"/> b											
Must stay in house all or most of the time 2 <input type="checkbox"/> a 2 <input type="checkbox"/> b Need the help of some special aid such as a cane or wheelchair in getting around 4 <input type="checkbox"/> a 4 <input type="checkbox"/> b Not limited in any of these ways 6 <input type="checkbox"/> a 6 <input type="checkbox"/> b											
15a. Do you ever feel that you need to see a doctor, but you don't see him? 1 <input type="checkbox"/> Yes → 15b 2 <input type="checkbox"/> No → 16											
b. Why don't you see a doctor? _____											
16. Is your health better, worse, or the same as that of other people your age?											
Better 1 <input type="checkbox"/> a 1 <input type="checkbox"/> b Worse 2 <input type="checkbox"/> a 2 <input type="checkbox"/> b Same 3 <input type="checkbox"/> a 3 <input type="checkbox"/> b											
17a. (Besides Medicare) are you covered by any health insurance that pays all or part of hospital bills?		(e) 1 <input type="checkbox"/> Yes → 17b 2 <input type="checkbox"/> No → 17c				(b) 1 <input type="checkbox"/> Yes → 17b 2 <input type="checkbox"/> No → 17c					
b. What is the name of the insurance company?		Name: _____				Name: _____					
c. (Besides Medicare) are you covered by any health insurance that pays all or part of the doctors' bills when you are in a hospital?		1 <input type="checkbox"/> Yes → 17d 2 <input type="checkbox"/> No → 17e				1 <input type="checkbox"/> Yes → 17d 2 <input type="checkbox"/> No → 17e					
d. What is the name of the insurance company?		Name: _____				Name: _____					
e. (Besides Medicare) are you covered by any health insurance that pays all or part of the doctors' bills when you are NOT in a hospital?		1 <input type="checkbox"/> Yes → 17f 2 <input type="checkbox"/> No → 18				1 <input type="checkbox"/> Yes → 17f 2 <input type="checkbox"/> No → 18					
f. What is the name of the insurance company?		Name: _____				Name: _____					
18a. During the past 12 months have you received hospital or medical care outside the county where you usually live?		1 <input type="checkbox"/> Yes → 18b 2 <input type="checkbox"/> No → 19				1 <input type="checkbox"/> Yes → 18b 2 <input type="checkbox"/> No → 19					
b. Which county(s)?		County(e) _____ State: _____				County(s) _____ State: _____					
TO INTERVIEWER: 19. Who responded to the record?		<input type="checkbox"/> Sample person <input type="checkbox"/> Proxy				<input type="checkbox"/> Sample person <input type="checkbox"/> Proxy					
Name of interviewer		Date of interview				Date of interview					

Name of sample person. . . .	Last name	First name	PSU	Serial Number
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## FOR UPDATING ONLY

20. In . . . how many weeks did you work either full or part time?  
*(Include paid vacation and paid sick leave. Do not include work around the house.)*

Number of weeks . . . . .  (If "0" → 22)

21. When you were working in . . . , did you usually work full time or part time?

1 ☐ Full time (35 hours per week or more) 2 ☐ Part time

22. What was the total income of your family living here during the past 12 months?  
*This includes wages and salaries, not income from business or farm, social security cash benefits, pensions, dividends, interest, rent, welfare payments, and any other money income received by the members of this family. (Show Card No. 1)*

1 ☐ Under \$1,000      4 ☐ \$3,000–\$3,999      7 ☐ \$7,500–\$9,999  
 2 ☐ \$1,000–\$1,999      5 ☐ \$4,000–\$4,999      8 ☐ \$10,000–\$14,999  
 3 ☐ \$2,000–\$2,999      6 ☐ \$5,000–\$7,499      9 ☐ \$15,000 and over

*(Space for making calculations)*

## FOOTNOTES AND COMMENTS

Original

## FOOTNOTES AND COMMENTS

Update

Item	Number of observations	Distribution in percent	Variable number (s)
Sample persons:			
Basic sample.....	4,399	96.3	2
2 not enrolled sample.....	168	3.7	0
Stay in-hospital:			1
No.....	3,568	78.1	3
3 yes.....	999	21.9	0
User status:			1
Not using services.....	637	14.0	4
4 using services.....	3,930	86.0	0
User status, covered services:			1
Not using services.....	637	14.0	5
5 using covered services....	3,637	79.6	6
6 using noncovered services only.....	293	6.4	0
Insurance status, sections I-III:			1
No insurance.....	1,400	30.7	7
7 partial insurance.....	2,773	60.7	8
8 full insurance.....	394	8.6	0
Insurance status, section I:			1
No insurance.....	2,218	48.6	9
9 partial insurance.....	2,039	44.6	10
10 full insurance.....	310	6.8	0
Insurance status, section II:			1
No insurance.....	2,071	45.4	11
11 partial insurance.....	2,248	49.2	12
12 full insurance.....	248	5.4	0

continued--

Exhibit 3. continued--

Item	Number of observations	Distribution in percent	Variable number (s)												
Insurance status, section III:															
No insurance.....	3,155	69.1	13	14											
13 partial insurance.....	1,267	27.7	0	0											
14 full insurance.....	145	3.2	1	0											
Deductible met status:															
Met.....	2,262	49.5	15												
15 not met.....	2,305	50.5	0	1											
Region and size of community:															
Northeast urban.....	1,068	23.5	16	17	18	19	20	21	22						
16 Northeast rural.....	203	4.4	0	0	0	0	0	0	0						
17 North Central urban.....	990	21.7	1	0	0	0	0	0	0						
18 North Central rural.....	382	8.4	0	1	0	0	0	0	0						
19 West urban.....	564	12.3	0	0	1	0	0	0	0						
20 West rural.....	71	1.5	0	0	0	1	0	0	0						
21 South urban.....	844	18.5	0	0	0	0	1	0	0						
22 South rural.....	445	9.7	0	0	0	0	0	0	1						
Living arrangement:															
In institution.....	252	5.5	23												
23 not in institution.....	4,315	94.5	0	1											
Household size:															
1 person.....	1,395	30.5	24	25											
24, 2 or more persons.....	2,898	63.5	0	0											
25 unknown.....	274	6.0	1	0											
Race:															
White.....	4,185	91.6	26	27											
26 Negro.....	360	7.9	0	0											
27 all other or unknown.....	22	0.5	1	0											
Marital status:															
Married.....	2,048	44.8	28	29											
28 nonmarried.....	2,213	48.5	0	0											
29 unknown.....	306	6.7	1	0											

Exhibit 3. continued--

Item	Number of observations	Distribution in percent	Variable number (s)
Education:			30 31
Less than 9 years.....	2,329	51.0	0 0
30, 9 years or more.....	1,808	39.6	1 0
31 unknown.....	430	9.4	0 1
Health limitations:			32 33 34 35
Confined to bed or house....	284	6.3	0 0 0 0
32 other limitations.....	294	6.4	1 0 0 0
33 no limitation.....	3,463	75.8	0 1 0 0
34 deceased.....	271	5.9	0 0 1 0
35 unknown.....	255	5.6	0 0 0 1
Health evaluation:			36 37
Better than others.....	2,042	44.7	0 0
36 same as others.....	1,985	43.5	1 0
37 worse than others.....	540	11.8	0 1
Work status:			38 39
None.....	3,703	81.1	0 0
38 some work.....	768	16.8	1 0
39 unknown.....	96	2.1	0 1
Age:			40 41
65-69.....	1,174	25.7	0 0
40, 70-74.....	1,406	30.8	1 0
41, 75 and over.....	1,987	43.5	0 1
Sex:			42
Male.....	1,898	41.6	0
42 female.....	2,669	58.4	1
Welfare status, sections I-III:			43
Some welfare.....	684	15.0	0
43 no welfare.....	3,883	85.0	1

Exhibit 3. continued--

Item	Number of observations	Distribution in percent	Variable number (s)
Welfare status, section I:			
Some welfare.....	586	12.8	44
44 no welfare.....	3,981	87.2	<u>0</u> 1
Welfare status, section II:			
Some welfare.....	405	8.9	45
45 no welfare.....	4,162	91.1	<u>0</u> 1
Welfare status, section III:			
Some welfare.....	412	9.0	46
46 no welfare.....	4,155	91.0	<u>0</u> 1
Number of interviews:			
12 interviews.....	4,269	93.4	47 48
47 less than 12-decreased..	240	5.3	<u>0</u> 0
48 less than 12-other.....	58	1.3	1 0 0 1

Robert R. Nathan Associates 12-Month Tape File, Charges Series, January-December 1969  
(In dollars)

Item	Total, Sec. I-III		Section I		Section II		Section III	
	Total	Ave. a/	Total	Ave.	Total	Ave.	Total	Ave.
Total charges.	786,461	172.21	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total not covered.....	134,798 (53)	29.52	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total covered.	651,663 (55)	142.69	274,997 (56)	60.21	334,020 (57)	73.14	42,646 (58)	9.34
Physicians,								
total.....	624,393	136.72	247,727 (67)	54.24	334,020 (77)	73.14	42,646 (87)	9.34
Home.....	n.a.	n.a.	26,011 (67a)	5.69	n.a.	n.a.	n.a.	n.a.
Office.....	n.a.	n.a.	193,995 (67b)	42.48	n.a.	n.a.	n.a.	n.a.
All other.....	n.a.	n.a.	27,721 (67c)	6.07	n.a.	n.a.	n.a.	n.a.
G.P.....	272,525	59.67	146,875 (69)	32.16	93,533 (81)	20.48	32,117 (89)	7.03
Other than								
G.P.....	351,868	77.05	100,852 (70)	22.08	240,487 (82)	52.66	10,529 (90)	2.31
Non-surgical.	n.a.	n.a.	n.a.	n.a.	188,384 (79)	41.25	n.a.	n.a.
G.P.....	n.a.	n.a.	n.a.	n.a.	93,533 (79a)	20.48	n.a.	n.a.
Other than								
G.P.....	n.a.	n.a.	n.a.	n.a.	94,851 (79b)	20.76	n.a.	n.a.
Surgical.....	n.a.	n.a.	n.a.	n.a.	145,636 (78)	31.89	n.a.	n.a.
Other medical								
persons.....	27,270	5.97	27,270 (68)	5.97	0 (80)		0 (88)	

Note: Number in parentheses denotes tape variable number.

n.a. = not available.

a/ Averages derived by dividing totals by 4,567.

Exhibit 3. continued--

Robert R. Nathan Associates 12-Month Tape File, Visits Series, January-December 1969

Item	Total, Sec. I-III		Section I		Section II		Section III	
	Total	Ave. <sup>a/</sup>	Total	Ave.	Total	Ave.	Total	Ave.
Total visits..	84,443	18.49	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total not covered.....	20,811 (54)	4.56	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total covered.	63,632 (59)	13.93	29,110 (60)	6.37	26,246 (61)	5.75	8,276 (62)	1.81
Physicians....	60,199	13.18	25,677 (63)	5.62	26,246 (71)	5.75	8,276 (83)	1.81
Home.....	n.a.	n.a.	2,557 (63a)	0.56	n.a.	n.a.	n.a.	n.a.
Office.....	n.a.	n.a.	20,479 (63b)	4.48	n.a.	n.a.	n.a.	n.a.
All other....	n.a.	n.a.	2,641 (63c)	0.58	n.a.	n.a.	n.a.	n.a.
G.P.....	34,824	7.63	16,973 (65)	3.72	11,635 (75)	2.55	6,216 (85)	1.36
Other than								
G.P.....	25,375	5.56	8,704 (66)	1.91	14,611 (76)	3.20	2,060 (86)	.45
Non-surgical.	n.a.	n.a.	n.a.	n.a.	22,552 (73)	4.94	n.a.	n.a.
G.P.....	n.a.	n.a.	n.a.	n.a.	11,635 (73a)	2.55	n.a.	n.a.
Other than								
G.P.....	n.a.	n.a.	n.a.	n.a.	10,917 (73b)	2.39	n.a.	n.a.
Surgical.....	n.a.	n.a.	n.a.	n.a.	3,694 (72)	0.81	n.a.	n.a.
Other medical persons.....	3,433	0.75	3,433 (64)	0.75	0 (74)		0 (84)	

Note: Number in parentheses denotes tape variable number.

n.a. = not available.

a/ Averages derived by dividing totals by 4,567.

## EXHIBIT 4

Robert R. Nathan Associates 3-Month Tape File (January-March 1969)

Item	Number of observations	Distribution in percent	Variable number(s)
Sample persons:			
Basic sample.....	4,399	96.3	2 0
2 not enrolled sample.....	168	3.7	1
Stay in-hospital:			
No.....	4,169	91.3	3 0
3 yes.....	398	8.7	1
User status:			
Not using services.....	1,602	35.1	4 0
4 using services.....	2,965	64.9	1
User status, covered services:			
Not using services.....	1,602	35.1	5 6
5 using covered services....	2,627	57.5	0 0
6 using noncovered services			1 0
only.....	338	7.4	0 1
Insurance status, sections			
I-III:			
No insurance.....	1,776	38.9	7 8
7 partial insurance.....	2,398	52.5	0 0
8 full insurance.....	393	8.6	1 0
Insurance status, section I:			
No insurance.....	2,803	61.4	9 10
9 partial insurance.....	1,473	32.2	0 0
10 full insurance.....	291	6.4	1 0
Insurance status, section II:			
No insurance.....	2,158	47.3	11 12
11 partial insurance.....	2,293	50.2	0 0
12 full insurance.....	116	2.5	1 0

continued--

Item	Number of observations	Distribution in percent	Variable number(s)															
Insurance status, section III:																		
No insurance.....	3,198	70.0																
13 partial insurance.....	1,274	27.9																
14 full insurance.....	95	2.1																
Deductible met status:																		
Met.....	807	17.7																
15 not met.....	3,760	82.3																
Region and size of community:																		
Northeast urban.....	1,068	23.5																
16 Northeast rural.....	203	4.4																
17 North Central urban.....	990	21.7																
18 North Central rural.....	382	8.4																
19 West urban.....	564	12.4																
20 West rural.....	71	1.6																
21 South urban.....	844	18.5																
22 South rural.....	445	9.7																
Living arrangement:																		
In institution.....	252	5.5																
23 not in institution.....	4,315	94.5																
Household size:																		
1 person.....	1,395	30.5																
24, 2 or more persons.....	2,898	63.5																
25 unknown.....	274	6.0																
Race:																		
White.....	4,185	91.6																
26 Negro.....	360	7.9																
27 all other or unknown.....	22	0.5																
Marital status:																		
Married.....	2,048	44.8																
28 nonmarried.....	2,213	48.5																
29 unknown.....	306	6.7																

continued--

## Exhibit 4. continued--

Item	Number of observations	Distribution in percent	Variable number (s)					
Education:			30	31				
Less than 9 years.....	2,329	51.0	0	0				
30, 9 years or more.....	1,808	39.6	1	0				
31 unknown.....	430	9.4	0	1				
Health limitations:			32	33	34	35		
Confined to bed or house....	284	6.3	0	0	0	0		
32 other limitations.....	294	6.4	1	0	0	0		
33 no limitation.....	3,463	75.8	0	1	0	0		
34 deceased.....	271	5.9	0	0	1	0		
35 unknown.....	255	5.6	0	0	0	1		
Health evaluation:			36	37				
Better than others.....	2,042	44.7	0	0				
36 same as others.....	1,985	43.5	1	0				
37 worse than others.....	540	11.8	0	1				
Work status:			38	39				
None.....	3,703	81.1	0	0				
38 some work.....	768	16.8	1	0				
39 unknown.....	96	2.1	0	1				
Age:			40	41				
65-69.....	1,174	25.7	0	0				
40, 70-74.....	1,406	30.8	1	0				
41, 75 and over.....	1,987	43.5	0	1				
Sex:			42					
Male.....	1,898	41.6	0					
42 female.....	2,669	58.4	1					
Welfare status, sections I-III:			43					
Some welfare.....	532	11.6	0					
43 no welfare.....	4,035	88.4	1					

Exhibit 4. continued--

Item	Number of observations	Distribution in percent	Variable number(s)
Welfare status, section I:			
Some welfare.....	450	9.9	44
44 no welfare.....	4,117	90.1	<u>0</u> 1
Welfare status, section II:			
Some welfare.....	345	7.6	45
45 no welfare.....	4,222	92.4	<u>0</u> 1
Welfare status, section III:			
Some welfare.....	375	8.2	46
46 no welfare.....	4,192	91.8	<u>0</u> 1

## Exhibit 4. continued--

 Robert R. Nathan Associates 3-Month Tape File, Charges Series, January-March 1969  
 (In dollars)

Item	Total, Sec. I-III		Section I		Section II		Section III	
	Total	Ave. <sup>a</sup>	Total	Ave.	Total	Ave.	Total	Ave.
Total charges.	204,462	44.77	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total not covered.....	30,457 (53)	6.67	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total covered.	174,005 (55)	38.10	74,848 (56)	16.39	86,449 (57)	18.93	12,708 (58)	2.78
Physicians,								
total.....	165,096	36.15	65,939 (67)	14.44	86,449 (77)	18.93	12,708 (87)	2.78
Home.....	n.a.	n.a.	8,647 (67a)	1.89	n.a.	n.a.	n.a.	n.a.
Office.....	n.a.	n.a.	50,411 (67b)	11.04	n.a.	n.a.	n.a.	n.a.
All other.....	n.a.	n.a.	6,881 (67c)	1.51	n.a.	n.a.	n.a.	n.a.
G.P.....	71,808	15.72	39,854 (69)	8.73	22,521 (81)	4.93	9,433 (89)	2.07
Other than								
G.P.....	93,288	20.43	26,085 (70)	5.71	63,928 (82)	14.00	3,275 (90)	0.72
Non-surgical.	n.a.	n.a.	n.a.	n.a.	50,217 (79)	11.00	n.a.	n.a.
G.P.....	n.a.	n.a.	n.a.	n.a.	22,521 (79a)	4.93	n.a.	n.a.
Other than								
G.P.....	n.a.	n.a.	n.a.	n.a.	27,696 (79b)	6.06	n.a.	n.a.
Surgical.....	n.a.	n.a.	n.a.	n.a.	36,232 (78)	7.93	n.a.	n.a.
Other medical persons.....	8,909	1.95	8,909 (68)	1.95	0 (80)		0 (88)	

Note: Number in parentheses denotes tape variable number.

n.a. = not available.

a/ Averages derived by dividing totals by 4,567.

## Exhibit 4. continued--

Robert R. Nathan Associates 3-Month Tape File, Visits Series, January-March 1969

Item	Total, Sec. I-III		Section I		Section II		Section III	
	Total	Ave. <sup>a/</sup>	Total	Ave.	Total	Ave.	Total	Ave.
Total visits..	20,894	4.57	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total not covered.....	2,904 (54)	0.64	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Total covered.	17,990 (59)	3.94	7,986 (60)	1.75	7,191 (61)	1.57	2,813 (62)	0.62
Physicians....	17,037	3.73	7,033 (63)	1.54	7,191 (71)	1.57	2,813 (83)	0.62
Home.....	n.a.	n.a.	829 (63a)	0.18	n.a.	n.a.	n.a.	n.a.
Office.....	n.a.	n.a.	5,507 (63b)	1.21	n.a.	n.a.	n.a.	n.a.
All other.....	n.a.	n.a.	697 (63c)	0.15	n.a.	n.a.	n.a.	n.a.
G.P.....	9,628	2.11	4,693 (65)	1.03	2,925 (75)	0.64	2,010 (85)	0.44
Other than								
G.P.....	7,409	1.62	2,340 (66)	0.51	4,266 (76)	0.93	803 (86)	0.18
Nonsurgical..	n.a.	n.a.	n.a.	n.a.	6,245 (73)	1.37	n.a.	n.a.
G.P.....	n.a.	n.a.	n.a.	n.a.	2,925 (73a)	0.64	n.a.	n.a.
Other than								
G.P.....	n.a.	n.a.	n.a.	n.a.	3,320 (73b)	0.73	n.a.	n.a.
Surgical.....	n.a.	n.a.	n.a.	n.a.	946 (72)	0.21	n.a.	n.a.
Other medical persons.....	953	0.21	953 (64)	0.21	0 (74)		0 (84)	

Note: Number in parentheses denotes tape variable number.

n.a. = not available.

<sup>a/</sup> Averages derived by dividing totals by 4,567.

## EXHIBIT 5

Mean Physician Charges, Variables RP1 through RP11, Total and Net Assignment Rate,  
By State and Carrier, 1969a/  
(in dollars)

Carrier	RP1	RP2	RP3	RP4	RP5	RP6	RP7	RP8	RP9	RP10	RP11	Total assignment rate %	Net assignment rate
Maine - Union Mutual <sup>b/</sup>	10.48	7.13	13.89	7.13	9.10	6.54	8.57	13.33	6.63	94.85	8.34	76.1	73.2
New Hampshire - B/S	10.71	7.33	12.56	7.20	8.70	6.57	9.11	14.90	7.00	96.16	8.21	76.9	75.5
Massachusetts - B/S	14.63	9.29	18.17	10.58	9.72	9.37	12.81	19.97	9.69	106.21	9.90	82.3	80.5
Rhode Island - B/S	16.42	10.69	20.41	9.40	11.48	9.29	13.10	26.03	10.80	116.91	11.28	78.2	76.6
Connecticut - General	16.20	9.41	19.10	10.12	10.24	9.83	14.19	23.49	9.99	130.69	9.98	55.2	48.1
New York - Group Health	13.94	9.18	18.18	9.62	11.71	9.27	-	23.80	12.57	103.30	11.93	41.0	33.4
Metropolitan	11.93	7.04	14.09	7.72	8.87	7.19	11.02	15.94	7.71	96.93	8.62	75.3	72.9
Buffalo B/S	13.59	8.65	13.08	8.70	10.53	8.30	12.51	18.54	8.49	87.90	10.34	73.9	71.9
N.Y.C. B/S	17.77	9.83	20.82	11.08	12.21	11.11	13.90	30.02	13.56	136.87	12.44	46.3	40.9
Rochester B/S <sup>b/</sup>	15.26	8.66	17.31	8.97	10.38	8.56	9.41	23.00	9.67	136.76	10.45	69.1	65.3
New Jersey - Prudential	14.00	9.09	17.81	8.78	10.19	8.44	12.36	23.03	10.85	120.67	10.45	58.8	52.7
Pennsylvania - B/S	11.27	7.39	14.38	7.75	9.02	7.29	10.45	16.37	8.63	92.83	8.95	65.3	56.8
Ohio - B/S	13.88	8.11	15.79	9.11	11.01	8.94	11.39	20.00	8.27	122.96	11.00	41.7	26.4
Nationwide	11.00	7.15	14.56	7.26	9.52	6.89	10.23	16.85	7.31	115.92	9.30	46.8	40.1
Indiana - B/S	10.29	6.92	14.37	6.95	9.61	6.46	11.63	14.37	6.35	91.47	9.21	48.0	38.6
Illinois - B/S	17.68	10.23	22.83	9.22	12.22	8.85	11.62	22.91	10.05	172.92	11.11	57.1	47.8
Continental Casualty	9.84	6.77	13.38	6.42	9.40	6.12	9.50	13.08	6.48	123.07	8.11	60.7	53.6
Michigan - B/S	13.10	8.03	16.38	8.71	11.79	8.23	11.08	18.73	8.23	110.16	10.13	68.2	64.6
Wisconsin - Madison B/S	9.91	6.58	13.16	6.37	9.84	6.31	9.20	13.86	6.57	94.54	8.31	79.0	77.1
Milwaukee B/S	14.74	8.81	20.01	8.40	11.73	8.46	10.95	19.87	8.69	125.64	11.02	65.6	61.2
Minnesota - B/S	8.29	6.39	14.79	5.71	8.90	5.84	7.67	10.79	5.62	91.23	6.85	70.2	66.5
Iowa - B/S	10.10	6.80	14.82	6.60	9.07	6.43	11.25	12.85	6.58	95.39	7.81	62.8	58.3
Missouri - B/S	11.59	7.74	15.53	7.36	10.52	7.35	9.23	16.34	8.38	108.74	9.70	65.4	60.5
General American	11.32	7.25	15.93	7.23	10.92	6.92	8.60	16.04	7.55	133.85	9.49	72.4	67.5
North Dakota - B/S <sup>b/</sup>	9.31	6.47	12.46	6.26	10.96	6.32	7.36	12.27	6.25	122.76	7.23	64.3	72.4
South Dakota - B/S <sup>b/</sup>	9.24	6.43	13.93	5.61	8.66	5.59	8.09	12.88	5.93	112.25	6.74	64.3	59.2
Nebraska - Mutual of Omaha	9.81	6.44	15.33	6.33	8.55	6.33	10.22	13.97	6.59	106.14	7.75	58.7	54.1
Kansas - B/S <sup>b/</sup>	9.46	6.68	12.42	6.62	8.99	6.18	7.43	12.59	6.62	97.96	7.91	73.9	72.0
Delaware - B/S	11.96	7.08	16.53	7.92	9.28	7.09	12.49	16.42	7.70	117.64	8.97	66.6	63.3
Maryland - B/S	13.06	7.46	16.93	8.14	9.73	7.79	16.37	20.79	9.25	114.29	9.75	68.3	63.9
District of Columbia - B/S	13.93	9.85	15.74	9.00	12.43	10.15	11.88	23.10	11.09	101.66	11.50	51.0	44.4
West Virginia - Nationwide	10.70	6.75	14.35	7.13	8.93	6.55	7.48	13.25	6.72	117.36	8.72	74.7	71.5

continued--

## Exhibit 5. continued--

Mean Physician Charges, Variables RPI through RP11, Total and Net Assignment Rate,  
By State and Carrier, 1969 continued--  
(in dollars)

Carrier	RP1	RP2	RP3	RP4	RP5	RP6	RP7	RP8	RP9	RP10	RP11	Total assignment rate %	Net assignment rate %
North Carolina - Pilot <sup>b/</sup> Prudential	13.96	6.40	18.39	7.69	11.37	7.10	17.85	17.42	7.23	164.55	10.55	-	-
South Carolina - B/S	10.79	6.11	13.92	6.68	10.05	6.60	12.89	15.16	7.49	113.48	8.06	63.9	58.7
Georgia - John Hancock <sup>c/</sup>	9.74	6.53	13.37	6.43	9.27	6.28	10.22	13.06	7.11	114.22	7.91	75.3	70.4
Florida - B/S	10.88	7.96	14.31	7.54	11.08	7.58	9.61	15.14	7.31	110.03	9.57	69.4	66.9
Kentucky - Metropolitan	12.95	8.85	16.33	8.08	13.81	9.47	12.69	23.30	12.01	99.83	13.86	50.1	45.4
Tennessee - Equitable	9.40	6.35	12.87	6.59	9.72	6.37	9.58	12.85	6.92	111.61	9.03	79.6	77.1
Alabama - B/S	10.52	6.56	13.75	6.56	11.14	6.90	8.39	14.12	6.62	127.12	10.22	64.8	61.4
Arkansas - B/S	12.11	7.17	17.41	7.59	10.23	7.05	8.64	16.20	7.65	132.45	9.63	66.0	60.5
Louisiana - Pan American	8.90	6.85	14.50	6.18	9.54	6.36	10.58	12.50	6.76	89.94	8.45	72.8	69.1
Oklahoma - Dept. of Welfare <sup>b/</sup>	10.71	9.83	13.65	6.46	10.23	6.59	10.04	13.96	8.28	136.31	8.87	70.6	68.3
Aetna <sup>b/</sup>	9.65	7.39	15.83	6.77	9.64	6.82	9.78	13.96	7.92	107.37	8.70	99.3	99.3
Texas - B/S	11.83	7.40	15.51	7.71	10.21	6.95	12.27	18.52	8.31	118.81	9.57	59.9	56.1
Montana - B/S	11.38	7.65	12.76	7.60	10.83	7.57	10.66	17.31	8.43	109.50	9.65	71.9	70.2
Idaho - Equitable <sup>b/</sup>	10.16	7.31	13.08	7.19	10.30	6.72	10.70	14.00	6.74	90.91	6.33	64.9	62.7
Wyoming - Equitable <sup>b/</sup>	10.76	7.11	18.84	6.76	11.19	7.20	12.67	16.50	7.32	94.43	9.25	73.4	71.2
Colorado - B/S <sup>b/</sup>	8.62	7.12	8.58	6.88	-	5.92	-	8.92	5.97	56.67	-	62.2	58.1
New Mexico - Equitable <sup>b/</sup>	11.65	7.65	13.66	7.75	10.36	7.51	7.64	16.84	7.40	87.08	9.64	82.8	81.2
Arizona - Aetna <sup>b/</sup>	11.54	7.19	15.11	7.88	12.61	7.60	10.27	16.58	7.26	118.72	10.68	69.9	65.1
Utah - B/S	13.88	8.98	16.83	8.87	12.81	9.04	16.21	22.39	10.32	112.09	11.68	53.8	48.9
Nevada - Aetna <sup>b/</sup>	15.25	8.40	19.43	7.56	11.13	6.87	10.04	26.44	8.10	120.10	10.45	62.2	62.2
Washington - B/S	17.89	10.60	25.65	9.92	16.08	9.41	16.12	30.09	12.36	167.38	12.71	70.0	65.6
Oregon - Aetna	12.85	8.28	17.91	8.16	11.91	7.98	9.94	23.92	8.70	108.30	9.47	67.7	66.5
California - B/S	12.42	8.11	15.48	7.99	11.43	8.02	11.40	20.88	8.18	102.08	9.79	61.3	57.5
Hawaii - Aetna <sup>b/</sup>	15.36	9.70	21.00	9.43	13.48	9.51	13.80	30.54	11.36	114.00	12.39	80.9	79.8
Puerto Rico - B/S <sup>b/</sup>	17.20	12.24	20.48	10.44	15.46	10.57	14.64	36.14	13.99	120.48	14.62	49.9	46.1
	13.70	7.41	16.71	8.62	17.13	8.00	-	23.51	9.08	117.86	12.27	49.4	41.8
	15.42	7.57	18.87	10.82	12.99	9.98	8.48	19.35	9.66	144.16	12.32	68.3	65.7

a/ Excludes Alaska, Mississippi, Vermont, Virgin Islands, American Samoa, Guam, Part of Virginia and Minnesota.

b/ Not listed in the PSU Sample Table for 1969.

c/ Discrepancy between PSU Sample Tables and Reasonable Charge Series.

APPENDIX B. VARIABLE NAME DICTIONARIES AND  
LISTS RELATING TO THE RESEARCH OF  
VOLUME II, PART I

# I. VARIABLE NAME DICTIONARY FOR TABLE 1

Consumer Price Index: U.S. Department of Labor, Bureau of Labor Statistics, Handbook of Labor Statistics, 1971.

Third-Party Payment: U.S. Department of Health, Education and Welfare, Social Security Administration, Social Security Bulletin. The social welfare series presented in the December issues of the Bulletin reported data for fiscal years on health expenditures in the public sector by government program and those in the private sector by source of funds (direct payments, insurance benefits, etc.). For data on a calendar-year basis, see Barbara S. Cooper and Nancy L. Worthington, National Health Expenditures, Calendar Years 1929-71 (Research and Statistics Note No. 3), Office of Research and Statistics, 1973. For without Medicare, 1966-70, see Dorothy P. Rice, "Medicare Expenditure for Physician Services (Calendar Years 1966-69)" (Research and Statistics Note No. 1), Office of Research and Statistics, 1972.

Population Insured: U.S. Department of Health, Education and Welfare, Social Security Administration, Social Security Bulletin, December 1969. Without Medicare, 1966-70, estimated from percent of civilian population.

Number of Population Insured: (1) Health Insurance Council, The Extent of Voluntary Health Insurance Coverage in the United States as of December 31, 1962; (2) Health Insurance Institute, Source Book of Health Insurance Data, 1963 and 1971-72; and (3) Health Insurance Association of America estimates.

Per Capita Income: U.S. Bureau of the Census, Statistical Abstract of the U.S. 1969, 1970, 1971.

Physicians Per 100,000 Population: U.S. Department of Health, Education and Welfare, Public Health Service, National Center for Health Statistics, Health Resources Statistics, Health Manpower 1965 and 1968, Public Health Service

publication no. 1509 (Washington, D.C.: U.S. Government Printing Office, 1966 and 1968).

II. LIST OF THE 35 MEDICARE PART B CARRIERS,  
TABLE 2

State	Carrier
1. Alabama.....	Blue Shield
2. Arizona.....	Aetna
3. Arkansas.....	Blue Shield
4. Colorado.....	Blue Shield
5. Connecticut.....	Connecticut General
6. Delaware.....	Blue Shield
7. Florida.....	Blue Shield
8. Georgia.....	John Hancock
9. Hawaii.....	Aetna
10. Idaho.....	Equitable
11. Indiana.....	Blue Shield
12. Iowa.....	Blue Shield
13. Kentucky.....	Metropolitan
14. Louisiana.....	Pan American
15. Maine.....	Union Mutual
16. Massachusetts.....	Blue Shield
17. Michigan.....	Blue Shield
18. Montana.....	Blue Shield
19. Nebraska.....	Mutual of Omaha
20. Nevada.....	Aetna
21. New Jersey.....	Prudential
22. New Mexico.....	Blue Shield
23. North Carolina.....	Pilot Life
24. North Dakota.....	Blue Shield
25. Oregon.....	Aetna
26. Pennsylvania.....	Blue Shield
27. Rhode Island.....	Blue Shield
28. South Carolina.....	Blue Shield
29. South Dakota.....	Blue Shield
30. Tennessee.....	Equitable
31. Texas.....	Blue Shield
32. Utah.....	Blue Shield
33. Washington.....	Blue Shield
34. West Virginia.....	Nationwide
35. Wyoming.....	Equitable

III. LIST OF MEDICARE PART B CARRIERS,  
TABLE 3

Carrier	State
<u>Carrier same as state</u>	
1. Alabama Blue Shield.....	Alabama
2. Aetna Life Insurance Company.....	Alaska
3. Aetna Life Insurance Company.....	Arizona
4. Arkansas Blue Shield.....	Arkansas
5. Colorado Blue Shield.....	Colorado
6. Connecticut General Life Insurance Co..	Connecticut
7. Delaware Blue Shield.....	Delaware
8. Florida Blue Shield.....	Florida
9. John Hancock Insurance Company.....	Georgia
10. Aetna Life Insurance Company.....	Hawaii
11. Equitable Life Assurance Society.....	Idaho
12. Indiana Blue Shield.....	Indiana
13. Iowa Blue Shield.....	Iowa
14. Metropolitan Life Insurance Company....	Kentucky
15. Pan-American Life Insurance Company....	Louisiana
16. Union Mutual Life Insurance Company....	Maine
17. Massachusetts Blue Shield.....	Massachusetts
18. Michigan Blue Shield.....	Michigan
19. Travelers Insurance Company.....	Mississippi
20. Montana Blue Shield.....	Montana
21. Mutual of Omaha.....	Nebraska
22. Aetna Life Insurance Company.....	Nevada
23. Prudential Life Insurance Company.....	New Jersey
24. Equitable Life Assurance Society.....	New Mexico
25. Pilot Life Insurance Company.....	North Carolina
26. North Dakota Blue Shield.....	North Dakota
27. Aetna Life Insurance Company.....	Oregon
28. Pennsylvania Blue Shield.....	Pennsylvania
29. Rhode Island Blue Shield.....	Rhode Island
30. South Carolina Blue Shield.....	South Carolina
31. South Dakota Blue Shield.....	South Dakota

continued--

Carrier	State
32. Equitable Life Assurance Society.....	Tennessee
33. Texas Blue Shield.....	Texas
34. Utah Blue Shield.....	Utah
35. Washington Physicians Service.....	Washington
36. Nationwide Insurance Company.....	West Virginia
37. Equitable Life Assurance Society.....	Wyoming
<u>Others</u>	
38. New Hampshire-Vermont Blue Shield.....	New Hampshire Vermont
39. Group Health Insurance (Queens County, New York).....	New York
40. Metropolitan Life Insurance Company....	New York
41. Blue Shield of Western N.Y.-Buffalo....	New York
42. United Medical Service (N.Y.C.).....	New York
43. Genesee Valley Medical Care-Rochester..	New York
44. Ohio Blue Shield.....	Ohio
45. Nationwide Insurance Company.....	Ohio
46. Illinois Blue Shield.....	Illinois
47. Continental Casualty Company.....	Illinois
48. Wisconsin Physicians Service-Madison...	Wisconsin
49. Surgical Care-Milwaukee.....	Wisconsin
50. Minnesota Blue Shield.....	Minnesota
51. Travelers Insurance Company.....	Minnesota
52. Missouri Blue Shield.....	Missouri
53. General American Life Insurance Company.....	Missouri
54. Kansas Blue Shield.....	Kansas
55. Maryland Blue Shield.....	Maryland
56. D.C. Blue Shield.....	Washington, D.C.
57. Travelers Insurance Company.....	Virginia
58. California Blue Shield.....	California
59. Occidental Life Insurance Company.....	California
60. Aetna Life Insurance Company.....	Oklahoma

Note: Only carriers from the 50 states and Washington, D.C., are included.

#### IV. VARIABLE NAME DICTIONARY FOR TABLES 4, 5, 15, 16, 17

Age (1970): "Over 75" as a percent of "over 65": U.S. Bureau of the Census, Statistical Abstract of the United States, 1970, Table 25, Washington, D.C., and 1970 Census of Population, General Population Characteristics.

AP (1967, 1969): Mean Allowed Charges, all services, Reasonable Charge Tabulations from 5 percent Part B bills, Tables 2A & 2B, December 1971.

ASR (1968, 1969): Net assignment rate. Data for 1968 by communication with N. Dickoff of the Social Security Administration, Office of Research and Statistics. Data for 1969 from RS Health Insurance Statistics, U.S. Department of Health, Education, and Welfare, Social Security Administration, Office of Research and Statistics, January 10, 1972. The ASR as published is in percent times 100; we divide the published figure by 100.

City (1970): Proportion of the population 65 and over living in cities of over 100,000 persons. 1970 Census of Population, tables 20 and 24.

DC/TC (1969): Percent Reduction of Physician Charges, all services, Reasonable Charge Tabulations from 5 percent Part B bills, Table 2A, December 1971.

Income (1969): Per Capita Income. U.S. Bureau of the Census, Statistical Abstract of the United States, 1969-1971, Washington, D.C.

NBI (1968): The Not-Bought-In Proportion, defined as 1 minus those bought in for Medicare Part B by the state as a percentage of those enrolled in Medicare Part A in the state. U.S. Department of Health, Education and Welfare, Social Security Administration, Selected State Data, Medicare, Fiscal Years, 1967-1970, Publication I/72-11750.

P (1967, 1969): Mean Physician Charges, all services, Reasonable Charge Tabulations from 5 percent Part B bills, Table 2A, December 1971.

Phys (1968): Total Non-Federal Physicians per 100,000 population.

Phys-Spe (1968): Non-Federal Physicians, Medical Specialties, per 100,000 population. American Medical Association, Distribution of Physicians, Hospitals, and Hospital Beds in the U.S., 1968, Chicago, 1970, Table 9, pp. 86-139.

PMSI (1968): Proportion of the population under 65 with surgical insurance. Health Insurance Institute, Health Insurance and Health Care Statistics, New York, February 1970.

REM (1969): Average supplementary medical insurance (SMI) reimbursement per enrollee by state. U.S. Department of Health, Education, and Welfare, Annual Statistical Supplement, Social Security Bulletin, June 1970, Table 3, p. 8.

SD of P (1969): Standard Deviation of Physician Charges, all services, Reasonable Charge Tabulations from 5 percent Part B bills, Table 2X, December 1970.

West: Census Regions: Northeast; North Central; South; West.

Northeast: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, Delaware, New York, New Jersey, Pennsylvania.

North Central: Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas

South: Maryland, District of Columbia, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, Texas

West: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, Hawaii.

White (1970): Proportion of the population 65 and over that is white. 1970 Census of Population, Table 20.

V. PROCEDURES COMMON TO PERSONS OVER AND UNDER  
65 YEARS OF AGE, AND THE PROCEDURE SELECTION  
METHODOLOGY, TABLE 10

Procedures of Approximately Equal Importance to Persons  
Over 65 and Under 65 Years and of Nearly Equivalent  
Performance Difficulty

<u>Procedure</u>	<u>NABSP Code*</u>	
	<u>T/S</u>	<u>Procedure</u>
Drainage of infected steatoma	2	0101
Radius, distal end, Colles' (including ulnar styloid), simple, closed reduction, with manipulation	2	0807
Bronchoscopy, diagnostic	2	2111
Subtotal gastrectomy with or without vagotomy (includes two BSCN '70 codes -- 3215 and 3216)	2	3115
Sigmoidoscopy, diagnostic, initial	2	3311
Hemorrhoidectomy, internal or internal plus external (excludes external only)	2	3375
Cholecystectomy	2	3515
Cystoscopy, diagnostic, initial	2	3931
Prostatectomy: TUR, complete	2	4321
Spinal puncture; lumbar puncture (independent procedure)	2	5057
Chest, single PA teleroentgenogram	5	7100
Spine, lumbosacral, A-P and lateral	5	7210
Wrist (A-P and lateral)	5	7256
Knee (two views)	5	7304
Upper gastro-intestinal tract (esophagus, stomach, duodenum and upper jejunum)	5	7358
Blood, glucose (sugar)	8	7726

\*NABSP Encoding Format: Type of Service (T/S) - one digit: 2 = Surgery, 5 = Radiology, 8 = Laboratory, Pathology; Specific Procedure - four digits.

Note: The NABSP lists 16 common procedures above. When Maryland and Michigan Blue Shield submitted their data, a few more procedures were added to those judged common to Medicare and the carrier's own business.

Procedures of Approximately Equal Importance to Persons 45.  
Over 65 and Under 65 Years and of Nearly Equivalent  
Performance Difficulty

Procedure

Terminology, Evaluative Comment

0101

Drainage of infected steatoma

Because of poor skin tone and poor skin function, it is highly likely that infected steatomas would have a greater incidence in the aged. On the other hand, it is less likely that the aged would bother to have such minor things repaired. As a consequence, the net result would be that this would have approximately equal frequency in both age groups. This procedure would be an exception to the greater surgical difficulty in the aged.

0807

Radius, distal end, Colles' (including ulnar styloid), simple, closed reduction, with manipulation

This procedure has relatively higher frequency at age extremes, i.e., high incidence under 21 and over 65 years of age. There is no difference in degree of performance difficulties associated with patient age; however, the healing process is more likely to be delayed in the aged.

2111

Bronchoscopy, diagnostic

Since the incidence of pulmonary malignancies is higher in the older age group, one might suspect a higher frequency of this procedure. On the other hand, since the procedure is done for non-malignant reasons, I would suspect that the incidence would be relatively equal in all age groups.

3115

Subtotal gastrectomy with or without vagotomy (includes two BSCN '70 codes -- 3215 and 3216)

Peptic ulcer not responding to medical treatment is more common in middle age. On the other hand, gastric malignancies have higher frequency in the older age group. Although gastric malignancies are usually treated by Total Gastrectomy, it is more likely that in the aged, the lesser procedure, Subtotal Gastrectomy, would be performed. The net effect would be that there would be little difference in occurrence for this procedure in age groups; with higher risk and longer recuperation period for the aged.

3311

Sigmoidoscopy, diagnostic, initial

This diagnostic procedure, to both males and females, probably has equal incidence at all age groups.

3375

Hemorrhoidectomy, internal or internal plus external (excludes external only)

The frequency of occurrence is the same in both age groups; the recuperative period in the aged would be greater.

## 3515 Cholecystectomy

The frequency would be the same in both age groups; the recuperation would be longer in the aged; the procedure is more common in females.

## 3931 Cystoscopy, diagnostic, initial

This diagnostic procedure, to both males and females, probably has equal incidence at all age groups.

## 4321 Prostatectomy: TUR, complete

The frequency of the over and under 65 groups of prostatic disease is about the same, although the 45 to 65 age group experience is of slightly higher frequency than over 65. Because this treatment is to a degree elective, there is a possibility that utilization by men over 65 who have less employment demands on their time. In case I hadn't mentioned it, this is an exclusively male procedure. Also, the aged tend to have more complications.

## 5057 Spinal puncture; lumbar puncture (independent procedure)

This simple diagnostic procedure probably has equal occurrence at all ages and between the sexes.

## 7100 Chest, single PA teleroentgenogram

I would judge that chest x-rays are taken with the same frequency for all age groups.

## 7210 Spine, lumbosacral, A-P and lateral

In the under 65 age group, there is greater likelihood of trauma which leads to the need for x-rays of the spine. In the older age group, the incidence of degenerate disease of the spine would be the most common reason for spinal x-rays. As a net result, the frequency should be about the same for both age groups.

## 7256 Wrist (A-P and lateral)

This procedure has relatively higher frequency at age extremes, i.e., high incidence under 21 and over 65 years of age. There is no difference in degree of performance difficulties associated with patient age; however, the healing process is more likely to be delayed in the aged.

## 7304 Knee (two views)

I think the incidence would be equal in all age groups; trauma would be the most probable reason for this procedure in the younger while degeneration would be the reason in the elderly.

7358 Upper gastro-intestinal tract (esophagus, stomach, duodenum and upper jejunum)

I feel this procedure is done with equal frequency at all age groups; it is less likely in children.

7726 Blood, glucose (sugar)

This procedure would be done with the same frequency at all age groups.

## HIBAC STUDY PROCEDURE SELECTION METHODOLOGY

In preparation for another research project, NABSP staff established a list of 55 procedures covering important areas of physician service to Blue Shield subscribers. The basic selection criteria were (a) high frequency (b) precise medical definition (c) representativeness. This list of procedures was drawn in the following manner:

1. Several lists of common procedures compiled by Blue Shield Plans for local actuarial and research purposes were reviewed. Additional enumerations of high frequency procedures extracted from Blue Shield Federal Employees Program experience reports by NABSP actuarial staff were analyzed.

These independently prepared listings contained many common procedures. A tentative list of high frequency medical procedures was drawn from these sources.

2. NABSP staff surveyed various time series employed by other investigators to trace physician fee movement. Seven procedures utilized by the Bureau of Labor Statistics in preparation of the physician fee component of the Consumer Price Index were incorporated in the list.

Similarly, three surgical procedures employed by Social Security Administration to monitor movement of fees for services commonly rendered to Medicare beneficiaries were added. This research, conducted

by the Bureau of Labor Statistics at the direction of SSA, also assembles charge information for medical services rendered to patients with two specific medical conditions. Because most Blue Shield Plans do not routinely record detailed diagnostic information in the subscriber record, charges for physician attendance in cases of cerebral hemorrhage and myocardial infarction were not included in the listings.

Procedure lists utilized by additional research groups were also searched for procedures. A list of the basic procedure sources employed in preparation of the NABSP list is included at the end of this section.

3. Blue Shield Plans routinely identify specific medical procedures by means of standard descriptive medical terminology and a basic four digit identification code. The terminology associated with each procedure drawn from the study lists described above was carefully evaluated, and those procedures with imprecise or non-specific descriptions were deleted. Illustration: The procedure described as "first aid" was consistently placed on lists of high frequency procedures prepared by investigators. However, "first aid" is not susceptible to specific definition. Physician services rendered under emergency conditions are widely variant and may produce legitimate charges for "first aid" which range from \$5 to several hundred dollars.

Similarly, the procedure code associated with "suture of a wound" contains charge information covering professional attention to minor as well as more serious injury. Significant variance in fees charged for these services would be expected.

The working list of procedures was reduced on this basis to insure proper classification of the data to be analyzed.

4. A professional committee of the NABSP Board is charged with providing medical opinion and expertise to NABSP. Members of the Medical Advisory Committee were requested to review the tentative list of procedures and suggest additions to or deletions from the group based upon the following criteria:

- a. The list of procedures should be representative of medical practice as covered by most Blue Shield Plans.
- b. The procedures included in the list should be medically important and should reflect the balance or mix of services covered by Blue Shield.
- c. Procedures included in the lists should be tightly defined in the view of trained professionals.

In response to this request, the Medical Advisory Committee eliminated certain procedures from the lists and added services selected to broaden the coverage of the lists. The Committee incorporated in

the lists, procedures in such areas as open heart surgery and additional categories of service, e.g., technical assistance at surgery.

5. NABSP staff extracted transactions data for this modified list of procedures from the files of Blue Shield Plans selected for geographic and Plan-size characteristics. These data were arrayed in a manner permitting comparisons of procedures by Plan and line of business within each Plan. A careful procedure-by-procedure analysis was performed and certain procedures were deleted because frequencies were judged insufficient for valid statistical evaluation.

Those procedures which contained zero frequency in some cells for logical reasons (e.g., no obstetrical services under Medicare), were retained. In other cases, low frequency was deemed a valid reason for excluding the procedure (e.g., open heart surgeries though important from a clinical standpoint are performed in insufficient volume to permit reliable statistical analysis). In other cases, Plan coding practices precluded retention of the procedures. (Many Blue Shield Plans do not record technical assistance at surgery as a separate type of service.)

This careful review, evaluation and analysis based on actual Plan data yielded the final 55 procedure master list.

6. In preparation for the extraction of data for the HIBAC study, NABSP staff prepared tentative groupings of procedures from the NABSP master list of 55 procedures:
  - a. Procedures More Important (Frequency/Cost) to Persons Over 65, But of Nearly Equivalent Performance Difficulty.
  - b. Procedures More Important (Frequency/Cost) to Persons Under 65, But of Nearly Equivalent Performance Difficulty.
  - c. Procedures of Approximately Equal Importance to Persons Over and Under 65 Years and of Nearly Equivalent Performance Difficulty.
7. These preliminary listings were reviewed by medical staffs of several Blue Shield Plans. In addition to suggesting additions or deletions, Plan physicians were requested to prepare specific evaluative comment for each procedure, addressed to the HIBAC study objective. These statements are included with the procedure lists.

Commenting on the problem of selecting procedure groups for comparison purposes, one Plan physician noted:

"As a general rule, surgery in the elderly is more difficult than in the young because:

- "1. The anesthesia risk is greater;
- "2. There is a greater bleeding tendency resulting from sclerosis of vessels;
- "3. More meticulous technique is necessary, for the same reason;
- "4. Stronger wound closure is necessary;
- "5. In fractures, there is an increased chance of comminution and a slower healing rate."

A colleague from another Plan agreed:

"For [these] reasons, it might be reasonable to assume that surgical charges for people over 65 could conceivably be slightly larger. However, offsetting this is the tendency for most surgeons to charge slightly less for elderly people."

Therefore, data describing Plan experience for these procedures must be analyzed and evaluated with these limitations in mind.

## PROCEDURE SELECTION SOURCES

1. Michigan Blue Shield Physician Fee Index
2. Greater New York City Most Frequent Procedures
3. Pennsylvania Blue Shield Fee Study
4. Rhode Island Blue Shield Fee Study
5. Texas Blue Shield Frequent Procedure Experience List
6. California Medical Society Physician Fee Index
7. Bureau of Labor Statistics Consumer Price Index "Physician Fee" Component
8. Social Security Administration Special Sample
9. Social Security Administration Ten Most Frequent Medicare Procedures
10. Social Security Administration Medical Procedure Study List
11. NABSP Actuarial Worksheet of High Frequency Procedures (based on FEP fifth contract year)
12. NABSP One Hundred Most Frequent Procedures (based on FEP eighth contract year)
13. NABSP Special Survey, 1969 - Ten Procedures
14. NABSP Special Compilation of High Frequency Procedures from FEP Experience Report (1970)
15. Electronic Data Systems Federal Corporation Fifty Most Frequent Procedures List





Appendix B

SMI CLAIM ASSIGNMENT RATE,  
FISCAL YEAR 1972

(December 20, 1972)



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

APPENDIX B

Mr. Thomas M. Tierney, Director  
Bureau of Health Insurance

DEC 20 1972

RS:EW

John J. Carroll, Assistant Commissioner  
Office of Research and Statistics

SMI Claim Assignment Rate, Fiscal Year 1972

1. From time to time during the past year we have pointed out in our regularly published reports that the SMI claim assignment rate was running considerably below the levels of the previous year. Complete data for fiscal year 1972 are now available and I thought you would be interested in a brief review of the behavior of assignment rates over the past few years.

2. This memorandum presents an overview of the changes in assignment rates which have occurred since fiscal year 1969, the first year for which reasonably complete data on assignment rates, based on claims, are available. Four tables are enclosed which present basic data on the assignment rate pattern. Table 1 shows the net SMI claim assignment rate (that based on receipts of SSA-1490 claims only), by calendar quarter for the period July 1968-June 1972. Tables 2-4 cover fiscal years 1970-1972, inclusive; these tables show annual rates for each fiscal year and the percent change from year to year. The assignment rate reached its highest level in FY 1970. Table 2 shows the net assignment rate by BHI region. Table 3 gives the distribution of SMI carrier reporting offices by net assignment rate; and table 4 shows the same data for individual carriers.

3. Available data indicate that the net assignment rate rose steadily, taking into account normal seasonal variability, until it reached its peak of 67.3 percent in July-September 1970, the first quarter of the fiscal year. For the remaining quarters in FY 1970, the rate was virtually at the same level as for the corresponding time period during the prior year. However, the rate was lower for each quarter in fiscal years 1971 and 1972 than in the corresponding periods of FY 1970. Moreover, the decline was much greater in FY 1972 than in FY 1971. Thus the rate in FY 1972 (56.4 percent) was 6.2 percent lower than in FY 1971. In comparison, the drop between the two previous fiscal years (1970 and 1971) was only 1.8 percent (table 1).

4. The decline in the net assignment rate between 1971 and 1972 was very widespread and is reflected in the rates for all BHI regions, although, carriers east of the Mississippi River generally experienced much smaller decreases in their assignment rates than did those west of the Mississippi--5.8 percent compared with 11.2 percent (table 2). Among individual carrier reporting offices, 76 out of 82 experienced a decrease in their assignment rates, the decreases ranging from a fraction of a percentage point to 31.8 percent. Among the few offices who reported an increase in their rate between 1971 and 1972, the largest rise was a very modest 1.8 percent for Thurston County Washington Blue Shield (tables 3 and 4).

5. Acceptance of assignment by physicians under Medicare depends on their general attitude toward the program, the size of the bills for specific services, their relationship with their patients, their patients' ability to pay, greater assurance of payment, and a wide variety of similar factors. There has also been some feeling that administrative and operating changes, which have occurred since the beginning of calendar year 1969, in the procedures for determining reasonable charges have probably affected the assignment rate too. These changes include the reasonable charge "freeze" at the beginning of 1969, the adoption of a one-year lag in recognizing increases in customary charges, the establishment of the 75th percentile as the prevailing charge limit effective January 1, 1971, the ruling by the Price Commission establishing Medicare fee levels in effect on November 13, 1971 as base prices, as well as the ruling that increases in Medicare fee screens during fiscal year 1973 should not exceed  $2\frac{1}{2}$  percent in the aggregate. These changes have been accompanied by (or perhaps have resulted in) significant increases in the reasonable charge reduction rate, i.e., the proportion of claims where the allowed charge is less than that billed by the physician.

6. This increase is vividly illustrated in figure 1 which shows the proportion of assigned SSA-1490's reduced because of reasonable charge determinations by calendar quarter for the fiscal years 1970-72. (Only the rate for assigned SSA-1490's is shown as a better measure of the impact of the increased reduction rate on assignments. It is assumed that doctors who do not accept assignment are not affected by possible reductions in their billed charges.) It should be noted that carriers were first required to report data on reasonable charge reductions in early 1969 and that reasonably complete data were not available until the July-September quarter of that year. It is impossible, therefore, to compare the reasonable charge reduction rates for periods prior to the changes described above with those after the changes went into effect. For purposes of comparison, figure 1 also shows the net assignment rate by quarter for fiscal years 1969-72. Various administrative and economic events that occurred during this period and may have affected the assignment and charge reduction rates are also noted on the chart.

7. The proportion of assigned SSA-1490's reduced as a result of reasonable charge determinations rose rapidly and steadily from 22 percent of approved claims (paid or applied to the deductible) in the first quarter of fiscal year 1970 to 46 percent in the last quarter of fiscal year 1971. Throughout 1972 the reduction rate remained fairly level at 45 to 46 percent. As noted above, the net assignment rate began to drop late in fiscal year 1970, continued to fall at a modest rate through 1971 and then dropped sharply during 1972. There is a strong relationship between the net assignment and reasonable charge reduction rates. The correlation coefficient between the two rates over the period shown in figure 1 was  $-.62$ , indicating that higher proportions of claims with reduced charges are associated with lower assignment rates.

8. It is hard to see any explicit relationship between the administrative and economic events recorded on figure 1, relating to the determination of reasonable charges, and the assignment rate. Obviously, the impact of some of these changes is reflected in the reasonable charge reduction rate. Some of the changes, moreover, might be expected to depress the assignment rate a priori. For example, the establishment of the 75th percentile of customary charges as the prevailing limit in January 1971 may account for the fact that the assignment rates for the April-June and July-September 1971 quarters were significantly lower than the rates for the same two periods a year earlier and did not increase to the same extent over the seasonal low in the January-March quarter as was true a year ago.

9. One interesting phenomenon shown in figure 1 is that while the reasonable charge reduction rate has been virtually stable since April-June 1971, the assignment rate has continued to fall. This may, of course, reflect the continued lag effect of such factors as the establishment of the 75th percentile as the prevailing charge limit at the beginning of 1971. Or, it may be the result of the interaction between the relatively high proportion of claims where charges are being reduced by carriers and the regulations issued under the Economic Stabilization Act. Since these regulations established base prices under Medicare (the fee levels in effect on November 13, 1971) and limited the allowable increases in physicians' fees, doctors may be more reluctant to run the risk, implicit in the assignment process, of having their charges reduced by carriers and having to accept the amount allowed as their full charge under the program.

10. We will continue to provide you with updated information periodically.

John J. Carroll

Enclosures (5)

Table 1.--Net assignment rates and percent change by quarter, fiscal years 1969-72

<u>Quarter</u>	<u>Net assignment rate</u>			<u>Percent change</u>			
	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1969- 1970</u>	<u>1970- 1971</u>	<u>1971- 1972</u>
Fiscal year, total	61.0	61.2	60.1	56.4	0.3	-1.8	-6.2
July-September	62.3	67.3	63.3	60.3	2.2	-0.6	-4.7
October-December	59.7	60.4	59.1	55.3	1.2	-2.2	-6.4
January-March	58.1	58.3	57.9	54.2	0.3	-0.7	-6.4
April-June	64.4	63.0	60.7	56.6	-2.2	-3.6	-6.8

Table 2.--Net assignment rate and percent change by BHI region, fiscal years 1970-72

<u>Region</u>	<u>Net assignment rate</u>		<u>Percent change</u>	
	<u>1970</u>	<u>1971</u>	<u>1970-1971</u>	<u>1971-1972</u>
U.S. Total	61.2	60.1	-1.8	-6.2
Boston	73.5	73.5	0.0	-2.3
New York	48.7	50.0	2.7	-3.2
Philadelphia	56.4	58.7	4.1	-0.2
Atlanta	61.1	64.2	5.1	-7.3
Chicago	54.5	52.2	-4.2	-7.3
Dallas	71.7	70.9	-1.1	-7.8
Kansas City	61.3	58.8	-4.1	-8.3
Denver	71.0	64.0	-9.9	-10.5
San Francisco	68.3	63.9	-6.4	-6.3
Seattle	62.0	55.3	-10.8	-13.2

Table 3.--Distribution of SMI carriers by net assignment rate, fiscal years 1970-72

Net Assignment Rate	FY 1970		FY 1971		FY 1972	
	Number of Carriers	Percent of Total	Number of Carriers	Percent of Total	Number of Carriers	Percent of Total
All reporting offices	83	100.0	83	100.0	82	100.0
80.0 or more	9	10.8	10	12.0	5	6.1
75.0-79.9	8	20.5	6	19.3	5	12.2
70.0-74.9	14	37.4	12	33.7	5	18.3
65.0-69.9	11	50.6	7	42.2	11	31.7
60.0-64.9	8	60.2	9	53.0	6	39.0
55.0-59.9	8	69.9	7	61.4	12	53.7
50.0-54.9	10	81.9	10	73.5	9	64.6
40.0-49.9	10	94.0	13	89.2	14	81.7
Less than 40.0	5	100.0	9	100.0	15	100.0

Table 4.--Net assignment rate and percent change, by carrier, fiscal years 1970-72

Carrier	Net assignment rate			Percent change	
	1970	1971	1972	1970-1971	1971-1972
Total - All Regions....	61.2	60.1	56.4	-1.8	-6.2
<u>Boston Region</u>					
<u>Connecticut</u>					
Connecticut General...	46.4	46.2	43.5	-0.4	-5.8
<u>Maine</u>					
Union Mutual.....	74.4	75.4	73.5	1.3	-2.5
<u>Massachusetts</u>					
Blue Shield.....	79.9	80.6	79.6	0.9	-1.2
<u>New Hampshire-Vermont</u>					
Blue Shield.....	74.5	70.1	68.7	-5.9	-2.0
<u>Rhode Island</u>					
Blue Shield.....	78.0	78.9	78.1	1.2	-1.0
<u>New York Region</u>					
<u>New Jersey</u>					
Prudential.....	54.0	54.8	53.2	1.5	-2.9
<u>New York</u>					
<u>Blue Shield</u>					
Buffalo.....	71.7	72.1	68.1	0.6	-5.5
New York.....	40.7	44.1	43.3	8.4	-1.8
Rochester.....	63.7	62.1	62.6	-2.5	0.8
Group Health.....	32.7	29.8	28.5	-8.9	-4.4
Metropolitan.....	72.4	69.8	65.0	-3.6	-6.9
<u>Puerto Rico</u>					
<u>Blue Shield</u>					
Puerto Rico.....	65.3	66.6	59.5	2.0	-10.7
Virgin Islands.....	---	---	47.4	---	---
<u>Virgin Islands</u>					
Mutual of Omaha.....	59.4	48.8	---	-17.8	---
<u>Philadelphia Region</u>					
<u>Delaware</u>					
Blue Shield.....	60.7	59.4	56.7	-2.1	-4.5
<u>District of Columbia</u>					
Blue Shield.....	46.4	51.5	50.9	11.0	-1.2
<u>Maryland</u>					
<u>Blue Shield</u>					
Baltimore.....	64.1	61.4	62.4	-4.2	1.6
<u>Pennsylvania</u>					
Blue Shield.....	54.8	58.8	59.8	7.3	1.7
<u>Virginia</u>					
Travelers.....	53.2	54.6	55.1	2.6	0.9
<u>West Virginia</u>					
Nationwide.....	71.8	68.5	60.3	-4.6	-12.0
<u>Atlanta Region</u>					
<u>Alabama</u>					
Blue Shield.....	67.3	77.3	77.1	14.9	-0.2
<u>Florida</u>					
Blue Shield.....	46.0	42.5	37.6	-7.6	-11.5
<u>Georgia</u>					
Prudential.....	75.3	77.5	74.7	2.9	-3.6

Table 4.--Net assignment rate and percent change, by carrier, fiscal years 1970-72 - Cont'd.

Carrier	Net assignment rate			Percent change	
	1970	1971	1972	1970-1971	1971-1972
<u>Atlanta Region (cont'd)</u>					
<u>Kentucky</u>					
Metropolitan.....	75.7	77.8	73.5	2.8	-5.5
<u>Mississippi</u>					
Travelers.....	72.1	82.5	81.4	14.4	-1.3
<u>North Carolina</u>					
Prudential.....	58.9	66.0	65.2	12.1	-1.2
<u>South Carolina</u>					
Blue Shield.....	70.1	73.3	66.3	4.6	-9.5
<u>Tennessee</u>					
Equitable.....	65.9	73.2	61.1	11.1	-16.5
<u>Chicago Region</u>					
<u>Illinois</u>					
Blue Shield.....	47.0	47.6	46.8	1.3	-1.7
Continental Casualty	51.7	51.8	49.1	0.2	-5.2
<u>Indiana</u>					
Blue Shield.....	40.3	40.5	36.8	0.5	-9.1
<u>Michigan</u>					
Blue Shield.....	66.4	65.5	66.2	-1.4	1.1
<u>Minnesota</u>					
Blue Shield.....	66.6	61.6	48.8	-7.5	-20.8
Travelers.....	47.4	39.5	35.5	-16.7	-10.1
<u>Ohio</u>					
Blue Shield.....	27.2	29.9	---	9.9	---
Nationwide.....	39.4	38.1	31.4	-3.3	-17.6
<u>Wisconsin</u>					
<u>Blue Shield</u>					
Madison.....	79.5	66.5	56.2	-16.4	-15.5
Milwaukee.....	59.5	57.2	51.3	-3.9	-10.3
<u>Dallas Region</u>					
<u>Arkansas</u>					
Blue Shield.....	73.3	73.5	56.9	0.3	-22.6
<u>Louisiana</u>					
Pan American.....	65.1	62.7	59.3	-3.7	-5.4
<u>New Mexico</u>					
Equitable.....	64.9	62.3	56.6	-4.0	-9.1
<u>Oklahoma</u>					
Aetna.....	55.5	50.8	41.3	-8.5	-18.7
Dept. of Welfare....	99.4	99.3	99.1	-0.1	-0.2
<u>Texas</u>					
Blue Shield.....	71.7	72.0	68.3	0.4	-5.1
<u>Kansas City Region</u>					
<u>Iowa</u>					
Blue Shield.....	51.4	43.9	37.8	-14.6	-13.9
<u>Kansas</u>					
<u>Blue Shield</u>					
Topeka.....	71.0	74.4	69.0	4.8	-7.3

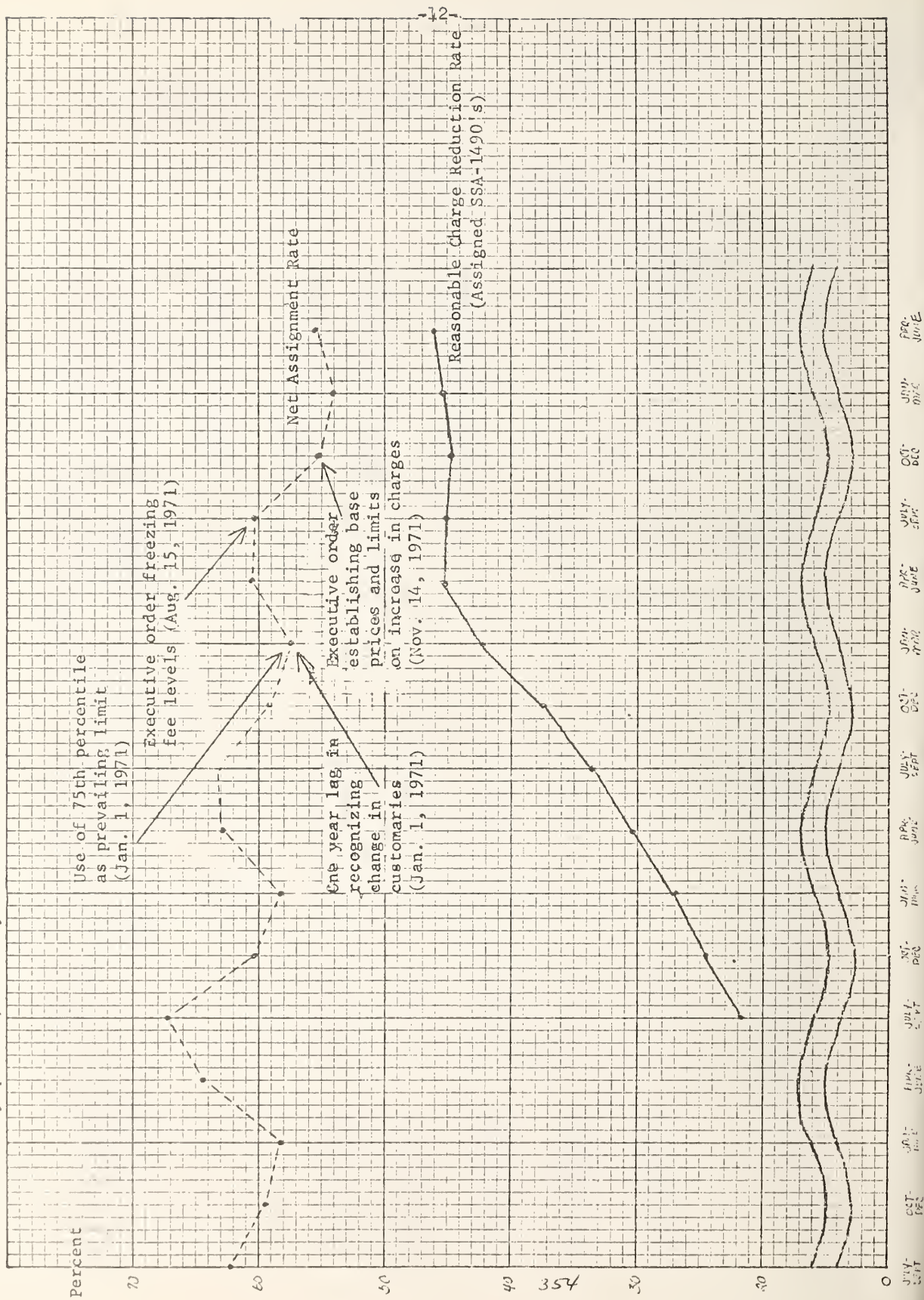
Table 4.--Net assignment rate and percent change, by carrier, fiscal years 1970-72 - Cont'd.

Carrier	Net assignment rate			Percent change	
	1970	1971	1972	1970-1971	1971-1972
<u>Kansas City Region (cont'd.)</u>					
<u>Missouri</u>					
Blue Shield.....	59.6	56.4	51.7	-5.4	-8.3
General American....	66.4	62.1	58.1	-6.5	-6.4
<u>Nebraska</u>					
Mutual of Omaha.....	53.3	54.2	49.4	1.7	-8.9
<u>Denver Region</u>					
<u>Colorado</u>					
Blue Shield.....	80.1	76.4	69.8	-4.6	-8.6
<u>Montana</u>					
Blue Shield.....	57.2	44.5	30.9	-22.2	-30.6
<u>North Dakota</u>					
Blue Shield.....	70.8	65.0	56.0	-8.2	-13.8
<u>South Dakota</u>					
Blue Shield.....	54.4	37.3	34.2	-31.4	-8.3
<u>Utah</u>					
Blue Shield.....	60.6	56.9	51.0	-6.1	-10.4
<u>Wyoming</u>					
Equitable.....	51.7	41.2	36.5	-20.3	-11.4
<u>San Francisco Region</u>					
<u>Arizona</u>					
Aetna.....	43.8	34.9	29.5	-20.3	-15.5
<u>California</u>					
Blue Shield.....	78.8	80.0	78.0	1.5	-2.5
Occidental.....	42.8	32.6	28.9	-23.8	-11.3
<u>Hawaii</u>					
Aetna.....	39.6	37.7	35.1	-4.8	-6.9
<u>Nevada</u>					
Aetna.....	60.6	53.9	45.2	-11.1	-16.1
<u>Seattle Region</u>					
<u>Alaska</u>					
Aetna.....	67.4	58.7	47.8	-12.9	-18.6
<u>Idaho</u>					
Equitable.....	68.8	53.9	36.8	-21.7	-31.7
<u>Oregon</u>					
Aetna.....	53.9	46.6	36.1	-13.5	-22.5
<u>Washington</u>					
Blue Shield					
Chelan.....	92.8	90.1	80.4	-2.9	-10.8
Clallam.....	86.9	82.9	70.9	-4.6	-14.5
Clark.....	84.2	70.8	59.1	-15.9	-16.5
Columbia.....	77.0	54.8	44.7	-28.8	-18.4
Cowlitz.....	84.6	83.8	58.8	-0.9	-29.8
Grays Harbor.....	69.1	72.1	65.4	4.3	-9.3
Jefferson.....	94.2	89.3	89.0	-5.2	-0.3
King.....	45.6	43.1	42.7	-5.5	-0.9

Table 4.--Net assignment rate and percent change, by carrier, fiscal years 1970-72 - Cont'd.

Carrier	Net assignment rate			Percent change	
	1970	1971	1972	1970-1971	1971-1972
<u>Seattle Region (cont'd)</u>					
<u>Washington (cont'd)</u>					
<u>Blue Shield (cont'd)</u>					
Kitsap.....	88.4	83.8	78.7	-5.2	-6.1
Kittitas.....	33.8	34.5	31.9	2.1	-7.5
Lewis.....	90.9	87.5	86.5	-3.7	-1.1
Pacific.....	62.5	64.2	64.1	2.7	-0.2
Pierce.....	61.3	60.0	54.8	2.1	-8.7
Skagit.....	57.8	47.9	40.6	-17.1	-15.2
Snohomish.....	54.1	48.6	45.5	-10.2	-6.4
Spokane.....	65.2	55.6	51.8	-14.7	-6.8
Thurston.....	72.8	70.9	72.2	-2.6	1.8
Walla Walla.....	71.4	71.5	65.1	0.1	-9.0
Whatcom.....	78.6	72.4	63.7	-7.9	-12.0
Yakima.....	71.0	64.3	52.3	-9.4	-18.7
<u>Railroad Retirement Board</u>					
Travelers.....	57.5	54.6	50.0	-5.0	-8.4
<u>Social Security Admin...</u>	0	0	0	0.0	0.0

Figure 1.--Net assignment rate by quarter, fiscal years 1969-72 and reasonable charge reduction rate for assigned SSA-1490's by quarter, fiscal years 1970-72



Appendix C

THE RESEARCH TRIANGLE INSTITUTE  
REPORT

A Study to Determine Factors Physicians Take  
Into Consideration in Deciding Whether to  
Accept Assignment, Billing Arrangements  
Physicians Make to Cope with the Deductible  
and Co-Insurance Features of Reimbursement,  
and the Nature of these Billing Practices

(August 1972)





RESEARCH TRIANGLE INSTITUTE

Center for Health Studies

APPENDIX C

24U-697

August 1972

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Volume I: Study Design and Pilot Survey

by

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W. C. Eckerman  
R. E. Mason  
T. G. Virag

August 1972

Prepared for:

U.S. Department of Health, Education, and Welfare  
Social Security Administration

RESEARCH TRIANGLE PARK, NORTH CAROLINA 27709

RESEARCH TRIANGLE INSTITUTE  
Center for Health Studies  
Research Triangle Park, North Carolina

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FR-24U-697

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## ACKNOWLEDGMENTS

The pilot study<sup>18</sup> reported herein was unique in that information on physicians' billing practices under Medicare was obtained through personal interview. Development of the overall study design, specification of the sampling plan and drawing the sample, development of the questionnaire and guidance in reporting the study results, therefore, represent the combined efforts of many persons both inside and outside the Research Triangle Institute.

The authors first wish to acknowledge the unfailing support and assistance of members of the Study Subcommittee of the Health Insurance Benefits Advisory Council with whom we met periodically to avail ourselves of their suggestions and guidance in the overall conduct of the study. At the beginning of the study Subcommittee members included: Carl E. Anderson, M.D.; Nelson H. Cruikshank; Merrill O. Hines, M.D.; Jay S. Reibel, M.D.; Ernest W. Saward, M.D.; Charles L. Schultze, Ph.D.; and, Herman Somers, Ph.D. New members appointed during the course of the study were: James R. Cowan, M.D.; Edwin H. May, Jr.; and, J. Minott Stickney, M.D.

Three staff members of the Social Security Administration stand out clearly in their unstinting willingness to give of their time as advisors and critics in designing the questionnaire and in reporting the study results. These men are Irwin Wolkstein, Deputy Director for Program Policy, Bureau of Health Insurance; Howard West, Director, Division of Health Insurance Studies, Office of Research and Statistics; and Aaron Krute, Deputy Director, Division of Health Insurance Statistics, Office of Research and Statistics.

We wish to express our gratitude also for the assistance given by the American Medical Association (AMA). Special acknowledgment goes to Ernest B. Howard, M.D., Executive Vice President, who solicited the cooperation of sampled physicians, and to C. N. Theodore, Director of the AMA Center for Health Services Research and Development, and his staff for their guidance in identifying appropriate medical specialty groups for study, providing the basic sampling frame used, and accomplishing the sample selection after the sample design was specified.

Our thanks go also to members of the staff of both North Carolina Blue Cross-Blue Shield and Prudential Insurance Company of America, Winston-Salem, N. C., for helping the RTI study team to better understand the responsibilities and functions of carriers under the Medicare program.

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## SUMMARY OF RESULTS OF THE PILOT SURVEY

Not surprisingly, Medicare patients are estimated to make up 25 percent or less of the practice of the majority of physicians in private practice in most areas selected for study. In the sampled areas of New York, New Jersey, and Massachusetts between one-half and two-thirds of the physicians shared this characteristic of their practice as did three-fourths of the physicians in the sampled areas of both California and Ohio. The notable exception was in the Florida area where it is estimated that two-thirds of the physicians' practices are more than one-half Medicare patients; further, there is indication that one physician in five in Florida has a practice in which three-fourths of the patients are covered by Medicare.

Differences among defined specialty groups do exist in regard to certain characteristics of physicians' practices. In the New York area, for example, only six percent of the physicians whose specialties are considered particularly relevant to health care of older patients (Specialty 2) are estimated to have between one-fourth and one-half their patient load consisting of Medicare patients as opposed to an average of 30 percent for all specialties. Since no particular reason for such departures from the general results can be postulated, their usefulness is certainly subject to question.

Physicians in all six areas agree that most of their total practice (Medicare and non-Medicare) represents patients from families with incomes of \$5-15,000 per year. It is estimated that in New York and California more than one-half the patients were in the \$10-15,000 a year family income group whereas patients in the Massachusetts and New Jersey areas were mostly in the lower \$5-10,000 income group; in Essex and Hudson Counties, New Jersey, selected for study because they represented an urban area with a large low income component and where reasonable charge rules are systematically applied, only five percent of the patients in the area are estimated to have annual family incomes of less than \$5,000. Ten percent of the patients in the Florida area, which is largely rural, are estimated to be from families of less than \$5,000 a year income; this is the highest percentage of low income patients in any area.

The vast majority of physicians accept assignment at least in selected cases. In the California area, selected because of its long history of

using the relative value system for physicians' charges, and in the New York area, selected because their plan is generally accepted as full payment for covered services, four out of five physicians apparently accept assignment at least part of the time. Approximately one physician in four in California always accepts assignment as does about one physician in six in the New York area.

In the New Jersey area there is indication that only one physician in four always accept assignment even though the area has a large low income component; further, it is estimated that 20 percent of the physicians never accept assignment.

Worcester County, Massachusetts, was selected for study because of a history of high acceptance of assignment. This is verified in this study in that over ninety percent of the physicians in the area accept assignment at least part of the time, and two-thirds of them always accept assignment; it is estimated that only one physician in twenty never accepts assignment.

That physicians in Ohio are recognized for their low rate of acceptance of assignment is verified also. It is estimated for the area studied that almost one-half of the physicians never accept assignment and an additional 35 percent accept only in selected cases. The Florida area experience was very similar to that in Ohio.

Physicians who accepted assignment at least some of the time were asked to identify the patient-related factors they considered in deciding whether or not to accept assignment; those physicians who indicated they did consider a given factor were asked also to indicate its importance. Let us consider only the two or three factors that most physicians in each area consider in deciding whether to accept assignment.

The most important patient-related factor in accepting assignment is the patient's ability to pay the bill for services. Clearly, if the patient could pay the bill, the physician would tend not to accept assignment. In four of the six areas studied, the existence of a personal relationship with the patient was an important consideration; that is, there was a slight tendency for physicians to accept assignment from patients who are well known to them and who might be hard pressed to pay for the physicians' services. Timeliness of payment was an important consideration only in the Massachusetts area, and in the California and New York areas an important

factor considered by physicians was whether the patient had Medicaid coverage or not.

In California and New Jersey it is estimated that about half the physicians consider the patient's ability to pay in deciding whether to accept assignment. There is indication that approximately two physicians out of five in all the other areas do also.

Personal relationship with the patient was the second most important patient-related factor in deciding whether to accept assignment in the California, New York, Ohio, and Florida areas. About one-half the physicians in California considered this factor; at the other extreme, only one physician in five is estimated to consider it in the Florida area.

Timeliness of payment was considered to be important only by physicians in Worcester County, Massachusetts. It is postulated that since this county has a sizable relatively low income component, greater assurance of timely payment for services may result by accepting assignment. Again, while differences among specialties are apparent for many factors considered in this study, including this one, no consistent pattern was observed among specialties either within an area or from one area to another.

Physicians were asked also to identify which factors, related to the Medicare program and its operation, were considered in accepting assignment. Of the eight program-related factors considered, seven were essentially negative in tone. That is, amount of paperwork, the complexity of the program generally, the patient's lack of understanding of the program, etc. all mitigate against the physician's accepting assignment. Assurance of payment in the context of this question, on the other hand, would tend to encourage acceptance of assignment. Assurance of payment was among the top two program factors in every area studied. In four out of six areas, the fact that the allowed fee for covered charges is less than the physician's charge was among the factors physicians considered of importance.

It is estimated that one physician in five in California and Massachusetts considered assurance of payment as a factor in accepting assignment--two areas which are typified by relatively high rates of acceptance of assignment. In the New York area, where physicians generally accept the plan as full payment, there is indication that one physician out of two took this factor into account. Assurance of payment, it is estimated, was considered by only one physician in four in the New Jersey area in spite of the presence of a large low income component in the population served.

'Lack of patient understanding of the Medicare program (responsibility for paying the deductible and co-insurance, for example) is estimated to be a relatively important factor in both the California and Massachusetts sample areas; two out of five physicians in these areas considered this factor. Half of those who considered the factor in Massachusetts indicated it to be "very important."

That the allowable charge for services under Medicare are likely to be less than the physician's charge was considered among the top two or three factors considered in accepting assignment in California, New York, and New Jersey. Apparently, therefore, reimbursement factors, differing markedly among these three areas, did not appear to be related to consideration of this factor.

In general, physicians have little difficulty in collecting the annual \$50 deductible from their Medicare patients. Of those physicians who accept assignment at least some of the time, it is estimated that more than six physicians out of ten in the California, New Jersey, Massachusetts, and Florida areas never or only occasionally experience difficulty. In the New York area, there is indication that nine physicians out of ten never or only occasionally experience difficulty.

Very few physicians in any area studied indicate they have special techniques for handling the \$50 deductible. The largest percentage (by a factor of two) was in California where about 23 percent of the physicians apparently do have what they consider to be special techniques. While few physicians felt special techniques were employed, it is interesting to note that taking special pains to make sure the patient understands and billing small charges to the patient until \$50 is reached are the most prevalent special practices in most areas studied.

In general, the experience of physicians in collecting the 20 percent co-insurance is less variable from one area to another than in the case of collecting the annual deductible. It is estimated, for example, that two out of three physicians never or only in selected cases have difficulty in the sample areas of California, New Jersey, Ohio, or in Florida. Ohio and Florida, of course, are characterized by low acceptance of assignment in this study. The New Jersey area, on the other hand, with its large low income component, shared this experience which suggests that difficulty in collecting the co-insurance is unique in some way this study did not detect.

Monroe County in New York was selected for study because their reimbursement plan is one which is generally accepted by physicians in the area as full payment for covered services under Medicare. It is not surprising, therefore, that these physicians also experience the least difficulty of physicians in any area in collecting the 20 percent co-insurance. It is estimated that 86 percent of these physicians never or only in selected cases experience difficulty in collecting.

The experience of physicians in the Massachusetts area, characterized by the highest rate of acceptance of assignment, is unique among the areas studied. Forty percent of the physicians in this area do have difficulty in collecting the co-insurance one-fourth the time or more.

Few physicians have special techniques for handling the co-insurance provision of Medicare. The percentage of physicians with Medicare patients who volunteered they use special techniques ranged from less than one percent in Florida, about four or five percent in the New York, Massachusetts, and New Jersey areas, to 12 percent in California and Ohio. The techniques most frequently used by physicians in California and Ohio respectively are to be sure the patient understands his responsibility beforehand and have all forms filled out for the patient; in both of these areas it is significant to note that some physicians volunteered that they simply did not bill the patient for the co-insurance (about one physician out of four or five among those who indicated special techniques were used).

Physicians who accept assignment also were asked specifically to indicate the frequency with which they bill for the deductible, accept assignment, and do not bill for co-insurance. When asked this question directly, as opposed to volunteering this way of operating, 20 percent of the physicians in California are estimated to always operate this way, and an additional 13 percent do some of the time. It is estimated that about 18 percent of the physicians in Ohio, where acceptance of assignment is low, operate this way some of the time and it is indicated that one physician in three in the New Jersey area does also; 11 percent always do. There was no meaningful pattern in this regard by specialty in any of the areas, though some differences were observed.

There is indication that 80-85 percent of the physicians who accept assignment, in all areas except Monroe County, New York, never vary their

charge for their most frequently provided service; it is estimated that two out of five physicians in the New York area do. Physicians in each area who do vary their charges were consistent in indicating that the patient's financial ability to pay and the nature of the patient's visit (complications, time spent with the patient, etc.) were the two most important factors influencing them.

Only about one-third of the physicians in each area indicated that some private health insurance plans, using different reimbursement methods, would be preferred to Medicare. Most physicians had no opinion. The physicians who responded affirmatively indicated the physician would benefit in that the other methods are less confusing, faster reimbursement would result (in California particularly) and there would be greater flexibility of charge. Most eligible physicians expressed the view that patients would benefit by better doctor/patient relationships, the patient would not have to pay as much out of pocket, and physicians would accept more Medicare patients if changes were made in present methods of reimbursement.

On the more positive side, it is estimated that between one-half and three-fourths of the physicians in the New York, Massachusetts, New Jersey, and Florida areas agree that Medicare has resulted in fewer bad debts; only about one-third of the physicians in California and Ohio agree.

There is general agreement, however, that Medicare has resulted in physicians' providing less free medical service. This feeling is particularly strong among physicians in the Massachusetts area, where there is a high acceptance rate, and in the New Jersey area where there is a large low income component in the population.

Further, it is estimated that over three-fourths of the physicians in each area soundly disagree that Medicare has resulted in increased charges per service among all patients (Medicare and non-Medicare).

In general, physicians in all areas do not agree that there has been an increase in physicians' net incomes as a result of Medicare. Physicians who agree there has been an increase, also agreed that it was less than 25 percent.

Specific suggestions for changes in Medicare procedures made by physicians primarily concerned paperwork, clerical procedures, the system of fee payment, and the fee rating system. Suggestions with regard to the fee payment system were predominant ranging from about 30 percent of

the physicians in Ohio to over 50 percent of the physicians in California. The suggestion most frequently made was that more realistic allowances should be set. It is estimated that one-half the physicians in Massachusetts, typified by a high assignment rate, would favor that fee schedules be set and published as guidelines for physicians' reimbursement; this is a significantly higher percentage of physicians than estimated for the other areas.

Suggestions regarding paperwork were second in frequency, and it was generally considered to be excessive; 38 percent of the physicians in Massachusetts and almost one-half those in Ohio had suggestions as compared to 8-20 percent of physicians in other areas. Physicians generally suggested that the form be simplified, particularly in the detailed description of services rendered.

Clerical procedures were not often the subject of suggestions, though the most prevalent suggestions were that the patient's signature not be required on the form and that all health insurance forms be standardized.

Few physicians who accept assignment made suggestions regarding the fee rating system also. Of those who did respond, however, suggestions most frequently made were that changes in allowable charges should not be made without notice and that fees should be automatically, periodically adjusted. There is indication, too, that some physicians in every area, except New York, feel that the present profile system is unfair principally to physicians who have a long fee history as compared to physicians with short or no history.

## I. PURPOSE OF THE HIBAC STUDY AND RTI OBJECTIVES

Title XVIII, Health Insurance for the Aged (Medicare), of the Social Security Act established a two-part health insurance program. Part A provides insurance protection against the costs of provider services (hospital, extended care facility, and home health agency) and is financed largely through Social Security taxes. Part B provides insurance protection against the costs of covered physicians' services and various other medical services to the aged who elect to enroll and pay monthly premiums which are matched with monies from Federal revenues. Both parts, administered by the Social Security Administration (SSA) through designated insurance intermediaries or carriers, are characterized by quite different reimbursement guidelines.

Under Part B of the Medicare Program, the carrier has primary responsibility for determining reasonable charges for covered services. The reasonable charge allowed by a carrier may not exceed (1) the physician's customary charge for the service, or (2) the prevailing charges in the locality for similar services. Also, the amount allowed may not exceed the charges applicable for comparable services and under comparable circumstances to the policy holders and subscribers of the carrier.

The allowed charge for the service may be paid directly to the patient, or the patient may assign the bill for collection to the physician if he is willing to accept assignment. Whether payment is made to the patient or the physician, the Medicare reimbursement is limited to 80 percent of the reasonable charge above an annual deductible of \$50. The patient, therefore, is responsible for the first \$50 of the reasonable charges for covered services he receives during the year (there is a carryover provision for expenses incurred during the last three months of the year).

When the payment is made directly to the physician on assignment, the physician's fee is limited by law to the reasonable charge determined by the carrier. The patient is responsible for 20 percent of the remaining reasonable charges above the deductible. Where there is no assignment, he is responsible for any portion of the physician's bill not paid by Medicare. The acceptance of assignment is significant because it limits

the patient's expenses with respect to covered services to the \$50 deductible and the 20 percent co-insurance.

The Health Insurance Benefits Advisory Council (HIBAC) is conducting

"a study of the methods of reimbursement for physicians' services under Medicare for the purpose of evaluating their effects on

- 1) physicians' fees generally,
- 2) the extent of assignments accepted by physicians, and
- 3) the share of total physician-fee costs which the beneficiary must assume."

Under a bill passed by the House of Representatives and pending in the Senate, the Council is to report the results of this study to Congress

"together with a presentation of alternatives to the present methods and its recommendations as to the preferred method."

In support of the HIBAC study, the Research Triangle Institute (RTI) has examined the interactions and arrangements between physicians and their Medicare patients related to their financial transactions. A survey of physician/patient Medicare-related interactions has never before been undertaken from the physician's perspective. The study reported herein is, in part, a test of the feasibility of eliciting physicians' responses to rather sensitive questions concerning their billing practices and an effort to produce limited though significant information and comparisons on physicians' practices in six selected, varied geographic areas. The results of this study are to be used as a basis for decision as to the need for, and value of, a national survey.

The Research Triangle Institute's specific objectives were to determine:

- (1) what factors physicians consider in deciding whether to accept assignment,
- (2) the extent to which they have adopted special billing arrangements to cope with the deductible and co-insurance features of reimbursement, and
- (3) the nature of those billing practices. Increased knowledge of the present patterns of physician/patient interactions in handling these matters should be valuable in appraising alternatives to the present reimbursement system and identifying a preferred system.

The information collected on acceptance of assignment, special billing arrangements, and actual practices as well as the factors contributing to those practices permit, even in this feasibility study, a number of comparisons

between physicians' practices in metropolitan versus non-metropolitan settings, comparisons among physicians of different specialties, comparisons among physicians exposed to carriers with variances in the application of reasonable charge guidelines, and comparisons among physicians accepting assignment at widely different rates. Limited comparisons are provided also among physicians of four different age groups, specified in terms of years since graduation.

## II. SELECTION OF PHYSICIANS TO APPEAR IN THE PILOT STUDY

Six geographic areas in the United States were chosen for this pilot study. The purposes involved in the selection included: representation of urban and rural differences, and intermediate urban/rural mixes; representation of a variety of carriers representing different ways in which reasonable charge guidelines are applied; a minimum physician population such that the major relevant physician specialty services would be included in each area; and cost of administering the interviews.

The listing in Table 1 identifies the six areas chosen, along with some associated characteristics upon which the selection was based.

Table 1

### GENERAL CHARACTERISTICS OF THE SIX AREAS SELECTED FOR STUDY

Area	Type	Population	Carrier
1 Monroe County (New York)	Rural/Urban	712	Genesee Valley Medical Care Inc.
2 Worcester County (Massachusetts)	Rural/Urban	638	Massachusetts Medical Service
3 Los Angeles County (California)	Urban	7,000	Occidental Life Insurance Co.
4 Essex County Hudson County (New Jersey)	Urban	1,539	The Prudential Insurance Co.
5 Franklin County Fairfield County (Ohio)	Urban/Rural	1,014	Nationwide Mutual Insurance Co.
6 De Sota County Hardee County Highlands County Manatee County Martin County Okeechobee County Sarasota County St. Lucie County (Florida)	Rural	365	Blue Cross-Blue Shield of Florida, Inc.

Based primarily on discussions with the HIBAC and the Social Security Administration, the above listed six areas were selected. The California area has a long history of use of the relative value system for physician reimbursement and the carrier is Occidental Life Insurance Company of California. Franklin and Fairfield Counties in Ohio were selected because of their low assignment rate; they are served by the Nationwide Mutual Insurance Company as carrier. The Monroe County, New York, plan is one which is generally accepted by physicians in this area as full payment for their charges; this area is served by Genesee Valley Medical Care, Inc. In contrast to Ohio, Worcester County in Massachusetts is characterized by a very high assignment rate and the carrier is the Massachusetts Medical Service. Essex and Hudson Counties in New Jersey are characterized by systematic application of Medicare reasonable charge rules to an urban area with a large low income component and is served by a commercial carrier, Prudential Insurance Company of America. The eight counties of northern Florida are predominantly rural in character, containing cities of less than 50,000 population, with a large elderly population. Thus, the available comparisons among areas include those between California, New York, and New Jersey in terms of reimbursement factors, between Ohio and Massachusetts in terms of high and low assignment rates, and Florida which is representative of a basically rural area as compared to New Jersey which is urban but with a large low income component.

Within each of the six areas, the population of physicians was restricted to those engaged in office-based patient care. These physicians were then grouped into 16 strata within each region. The stratification imposed consisted of a cross classification of four specialty groups by four groups designating the time since graduation of the physician.

Two criteria were imposed in defining the specialty groups; an attempt was made to include about the same number of physicians (on a national basis) in each specialty group and, guided by the American Medical Association (AMA) staff, the specialty groups were defined, generally, in terms of their relevance to the health care of older patients. As shown in Table 2, Specialty Group 1 was identified as General and Family Practice Physicians. Specialty Group 2 included specialties considered particularly pertinent to treatment of older patients and included specialists in Internal Medicine, Pulmonary Disease, Cardiovascular Disease, Gastroenterology, OB/GYN, and Allergy. Obstetrics and Gynecology was included in this group in recognition

Table 2

## SPECIFICATION OF SPECIALTY GROUPS AND TIME SINCE GRADUATION

SPECIALTY: *	
Group 1	General and Family Practice
Group 2	Internal Medicine Pulmonary Disease Cardiovascular Disease Gastroenterology Obstetrics and Gynecology Allergy
Group 3	General Surgery Neurological Surgery Ophthalmology Orthopedic Surgery Otolaryngology Thoracic Surgery Urology
Group 4	Anesthesiology Diagnostic Radiology Neurology Pathology Radiology Therapeutic Radiology Physical Medicine and Rehabilitation Psychiatry
TIME SINCE GRADUATION:	
Group 1	Five to nine years
Group 2	Ten to fourteen years
Group 3	Fifteen to twenty-four years
Group 4	Twenty-five years or more

\* All physicians sampled were engaged in office-based patient care. Provider-based physicians, physicians in prepaid group practice, and physicians in the employ of government agencies (administration, research, etc.) were not considered.

of the fact that in smaller cities and rural areas, such specialists provide many services of a general nature that are not closely related to their specialty. Specialists included in Specialty Group 3 were predominantly providing surgical care. Included specialties were: General Surgery, Neurological Surgery, Ophthalmology, Orthopedic Surgery, Otolaryngology, Thoracic Surgery, and Urology. Specialty Group 4, designated as "Other" in general, included Anesthesiology, Diagnostic Radiology, Therapeutic Radiology, Physical Medicine and Rehabilitation, and Psychiatry. Specialties not included were Aerospace Medicine, Child Psychiatry, Dermatology, Diagnostic Roentgenology, Forensic Pathology, General Preventive Medicine, Occupational Medicine, Pediatrics, Pediatric Allergy, Pediatric Cardiology, Plastic Surgery, and Public Health.

Time since graduation strata were formed to permit analysis of results by levels of experience of the physician, or at least by some mix of experience and level of contemporary training. This dimension of stratification is also correlated with age of the physician and financial status. On the recommendation of members of the AMA staff, the time period 0-4 years after graduation was not considered; most physicians spend from two to four years after graduation as interns, etc. before entering private practice.

The population distribution of physicians over the possible 96 cells in the design is shown in Table 3. Where the population of physicians in the cell was large enough to permit it, a total of six physicians were randomly selected to appear in the sample. From among these six, two were selected at random and designated, in the order of their selection, as alternate number one and two. These two physicians were contacted in cases where refusals were encountered among the remaining four physicians, or where deaths, movements out of the area, and so on, made it impossible to contact one (or two) of them.

By this mechanism it was hoped to have exactly four physicians sampled in each of the 96 cells, or 384 physicians in the sample. The equally sized samples for all classifications and cross classifications appearing in the design was considered desirable from the point of view of facilitating tests of hypotheses among the various classifications of interest. That is, with no problems arising from unequal subclass numbers, the analysis of the data along any dimension of the design is facilitated.

Table 3

DISTRIBUTION OF PHYSICIAN POPULATION IN EACH AREA  
BY SPECIALTY AND YEARS SINCE GRADUATION

Area	Specialty	Years Since Graduation				Total
		5-9	10-14	15-24	≥ 25	
N. Y.	1	72	26	5	2	105
	2	106	80	62	23	271
	3	107	54	26	8	195
	4	41	44	33	12	130
Mass.	1	104	24	7	3	138
	2	74	34	16	5	129
	3	79	33	15	5	132
	4	34	20	6	3	63
Calif.	1	838	471	826	143	2,278
	2	1,019	681	476	189	2,365
	3	988	609	389	150	2,136
	4	556	587	422	158	1,723
N. J.	1	285	72	19	2	378
	2	273	117	68	24	482
	3	274	95	47	20	446
	4	110	77	36	20	243
Ohio	1	105	55	24	18	202
	2	99	56	30	20	205
	3	101	50	29	15	195
	4	55	73	27	19	174
Fla.	1	37	45	13	8	103
	2	26	26	12	7	71
	3	37	38	24	14	113
	4	17	19	11	8	55
Total		5,437	3,386	2,633	876	12,332

However, not all cells had a sufficiently large population of physicians to make this arrangement possible as we have just seen. Fortunately, there were only a few cells in the design for which no physicians could be interviewed.

The sample distribution of physicians is shown in Table 4. Of the 314 physicians interviewed, it is of interest to note that the distribution by specialty was quite uniform, ranging from 21 percent of all physicians interviewed being in Specialty 4 to 28 percent of all physicians interviewed being in Specialty 3. The number of physicians interviewed by years since completing their education in each area evidences essentially the same pattern. Though no special meaning can be ascribed to it, the New Jersey sample includes somewhat fewer physicians in Specialty 1 compared to other areas and no physicians with 25 or more years experience since graduation in either Specialty 1 or Specialty 2.

Population estimates for each area studied were derived from the sample data as shown in Appendix A and are discussed in Section V of this volume of the report. As seen from the preceding discussion, the results of this pilot feasibility study, (Section V) should be interpreted rather carefully. The results pertain only to a specifically defined subset of the population of physicians in each area. The areas themselves were not selected at random so that the study results do not represent the practices of physicians either in the state (as labeled in the tables to follow) nor in the U. S. as a whole. The sample size, averaging approximately 52 physicians per area, is of a size that only direct effects and first order interaction comparisons within each area are measured with reasonable precision. Gross differences in physician practices, however, both between and within areas by specialty and by years since graduation are evident.

Table 4

DISTRIBUTION OF PHYSICIANS IN THE SAMPLE BY SPECIALTY AND  
YEARS SINCE GRADUATION

Area	Specialty	Years Since Graduation				Total
		5-9	10-14	15-24	≥ 25	
N. Y.	1	3	5	3	-	11
	2	4	3	4	3	14
	3	3	3	4	4	14
	4	2	3	2	1	8
Total		12	14	13	8	47
Mass.	1	5	5	3	1	13
	2	4	4	4	4	16
	3	3	4	4	4	15
	4	3	1	2	2	8
Total		15	13	13	11	52
Calif.	1	2	3	4	2	11
	2	4	3	3	3	13
	3	3	3	4	4	14
	4	4	3	3	2	12
Total		13	12	14	11	50
N. J.	1	1	4	4	-	9
	2	4	5	1	-	10
	3	4	4	4	2	14
	4	3	2	2	1	8
Total		12	15	11	3	41
Ohio	1	4	4	4	2	14
	2	4	4	4	4	16
	3	4	4	4	4	16
	4	4	4	3	4	15
Total		16	16	15	14	61
Fla.	1	4	4	4	4	16
	2	4	4	4	4	16
	3	4	4	4	4	16
	4	3	4	4	4	15
Total		15	16	16	16	63

### III. QUESTIONNAIRE DESIGN

A completely candid, straightforward approach was adopted in contacting and eliciting the cooperation of physicians. It was felt that the data desired in this study would be difficult to collect for two basic reasons: first, the sensitivity of the information itself, that is the physicians' reluctance to divulge any information regarding the informal practices and the factors bearing on those practices that he has developed to bill and collect either within or without existing Medicare provisions; secondly, the physician himself may be ill-prepared to provide the desired information. For both of these reasons a carefully structured interview was developed to permit the physician to respond appropriately. Because of the potential sensitivity of the information, it was considered necessary to seek the endorsement of the American Medical Association and, in all subsequent contacts with selected physicians, emphasize the composition and mission of the Health Insurance Benefits Advisory Council.

Since a considerable amount of information regarding physicians' fees generally and the share of total physician fees costs which the beneficiary must assume can be obtained through analysis of secondary data, the focus of the RTI study was on the design and conduct of an indepth inquiry into the physician/patient behavior vis à vis Medicare and the rationale or factors behind their procedures.

Early versions of the questionnaire were composed of predominantly open-ended questions. After extensive pretests, however, it was decided that most of the questions would be made closed in order to minimize misunderstanding as to its intent or meaning. The final questionnaire was a combination of closed and open-ended questions. Closed questions included those concerned with assignment, handling of the \$50 deductible, handling of co-insurance, patient-related factors in accepting assignment, program-related factors in accepting assignment, varying charges for services and effects of Medicare on medical practice. The final relevant subject, suggestions for improvement in the Medicare Program, was left completely open-ended as were questions concerning any special techniques for handling the deductible, handling co-insurance, and physicians' reasons for never accepting assignment. The questionnaire used in this study is contained in Volume II, Field Interviewer's Manual.

#### IV. PHYSICIANS' RESPONSES AND INTERVIEWER PERFORMANCE

As noted earlier, the sample was drawn from the master register of the American Medical Association (AMA) which lists all physicians whether they are members of the Association or not. The sample of physicians in this pilot survey included only non-hospital based, non-research, non-administrative, non-government physicians who are engaged in direct patient care. The total sample was to consist of 576 physicians; that is, four physicians and two alternates per cell. In fact, there were 559 physicians in the sample.

A summary of sampling response rate, participation response rate, and hours worked by field interviewers is presented in Table 5. In this table the sampling response rate is the number of completed questionnaires as a percentage of the total number of physicians contacted (minus alternates who were not used). Of the 559 physicians in the AMA sample, an attempt was made to contact 489 physicians (70 alternates were not used). A summary of the physician contact outcomes is shown in Table 6. Thus, of the total number of physicians for whom contact was attempted, 65 percent resulted in interviews.

A packet of material highlighting the objectives and procedures of the study, a list of the members of the Health Insurance Benefits Advisory Council and a letter of endorsement from the American Medical Association was mailed to one-half the selected physicians (see Appendix B). This mailing was followed up by a telephone call request for appointment to conduct the interview. The remaining half of the selected physicians were simply contacted directly by telephone without any prior mailout.

The sampling response rate, interestingly, did not differ markedly for those physicians who received advance mailouts as compared to those who received no advance mailouts. Clearly, advance information did not enhance the willingness or unwillingness of the physician to respond in this survey.

Of the 369 physicians who were actually contacted, only 55 refused to be interviewed; that is, 85 percent responded favorably. This participation response rate is the ratio of responders to those who were appropriate to contact (i.e., including refusals). The participation response rate, then, resulted in a total of 314 completed questionnaires

Table 5

## SUMMARY OF HIBAC FIELD WORK

Area	Questionnaire Completed	Sampling Response Rate			Participation Response Rate			Hours Worked by Field Interviewers			
		Mailout	No Mailout	Total	Mailout	No Mailout	Total	Training	Questionnaire Administration	Other	Total
N. Y.	47	51.2	59.5	55.3	73.3	83.3	78.3	25.00	25.75	75.25	126.00
Mass.	52	75.0	59.5	67.5	90.9	81.5	86.7	13.00	23.50	44.75	81.25
Calif.	50	54.5	56.5	55.6	82.8	81.3	82.0	25.50	36.75	133.00	195.25
N. J.	41	57.1	40.5	48.8	77.4	73.9	75.9	13.75	21.75	72.25	110.75
Ohio	61	80.0	69.0	74.4	91.4	90.6	91.0	21.00	25.75	102.25	149.00
Fla.	63	88.9	88.6	88.7	97.0	93.9	95.5	13.50	19.25	60.25	93.00
Total	314							111.75	152.75	490.75	755.25
Ave.	52.3	67.8	62.3	65.1	85.5	94.1	84.9	18.62	25.46	91.79	125.87

Table 6  
STATUS OF PHYSICIANS WITH WHOM CONTACT WAS ATTEMPTED

Area	Interviewed	Refused	Ineligible	Retired or Deceased	Vacation or Ill	Moved	Not Located	Alternates Not Used	Number in Sample
N. Y.	47	12	14	-	6	3	3	6	91
Mass.	52	8	7	0	7	3	0	11	88
Calif.	50	11	16	4	2	5	2	6	96
N. J.	41	13	18	1	5	-	6	8	92
Ohio	61	6	10	-	1	2	2	14	96
Fla.	63	5	-	3	-	-	-	25	96
Total	314	55	65	8	21	13	13	70	559

completed through personal interviews with physicians in the six areas sampled. The number of questionnaires completed among the six areas of interest range from 41 in New Jersey to 63 in Florida, providing an average of 52.3 completed questionnaires per area.

The last four columns of Table 5 show the hours worked by field interviewers. It is interesting to note that the 111.75 hours for training represents approximately 15 percent of the total field interviewer work hours. Questionnaire administration, 152.75 hours, represents only actual interview time in terms of the number of questionnaires completed by interviewers; this represents approximately 33 minutes per interview. Other hours worked are predominately composed of travel time and waiting time in the doctors' offices divided equally between the two. In addition, some time is logged in this column for work with the supervisor, review of questionnaires when turned in to supervisors, additional training, etc. It is of interest to note that the questionnaire administration consumed about 20 percent of the field interviewer's time. Other activities including travel, waiting time, work with the supervisor, etc. made up the remaining 65 percent of their efforts.

The disparity between hours worked by field interviewers in the total column warrants comment. It will be noted that the hours worked are significantly lower in Massachusetts and in Florida. This is due to the fact that, in contrast with the other areas, more of the questionnaires completed were undertaken by the field supervisors themselves. In Florida, for example, interviewers actually completed 38 of 63 questionnaires. It is to be expected that the "other" hours worked in California would be highest. The California sample was drawn from the metropolitan Los Angeles area which required a great deal of travel by the interviewers.

It is noteworthy that early in this pilot study the need for remuneration for the physician's time as an incentive for him to respond to personal interview might well be required. During the physician contacts, no possibility of remuneration for their time was mentioned except in those few instances in which the physician himself indicated that he could not respond without remuneration. The remuneration was \$25 for a one-half hour interview (though some interviews lasted an hour or more due to the physician's interest). In rare cases an offer of remuneration was made,

and almost without exception, it was accepted. In the entire survey of 314 physicians, only ten requested and received remuneration. It is the definite feeling of the RTI study team that in these rare instances the remuneration was taken by the physician as a demonstration of the importance with which we viewed this study and the results that would be forthcoming.

Though not shown in the summary table, the response rate of the physicians was much higher when contacted directly from the Research Triangle Institute in North Carolina than when contacted after the field supervisor was in the local area. Long distance calls, apparently, tended to add importance to the problem at hand.

All in all, the responsiveness of the physicians to this survey was outstanding. It clearly demonstrates high physician interest in the problems, the efficacy of the approach to them by the field supervisors, and finally, the care with which interviewers were selected. The Field Interviewer's Manual, which includes the questionnaire, is contained in Volume II of this report.

Of the physicians interviewed, 81.6 percent of them answered all questions; of these physicians, 20.2 percent had an office assistant present during the interview. Fifteen and six-tenths percent answered the attitudinal questions and turned the interviewer over to an office manager, bookkeeper, medical secretary or controller for specifics regarding percentage of patients covered by Medicare, etc. Only in 2.8 percent of the cases was another physician in the office called upon to respond because the physician designated by the sample procedure could not keep his appointment (emergencies, etc.).

## V. RESULTS OF THE PILOT SURVEY

This pilot feasibility study provides insight into the factors physicians consider in deciding whether to accept assignment, the extent to which they have adopted special billing arrangements to cope with the deductible and co-insurance features of reimbursement, and the nature of those billing practices.

The areas were selected to represent metropolitan and non-metropolitan areas, different reimbursement factors for establishing physician reimbursement, a wide range in assignment acceptance rate, and to a lesser degree, levels of reimbursement as well as geographic area.

### A. Characteristics of Physicians' Practices

The physicians in the sample were asked to estimate the percent of their patient load that has Medicare coverage. The results, weighted to account for the different numbers of physicians in the populations in each design cell, are shown in Table 7.

Table 7

#### PERCENT OF PHYSICIANS' PATIENTS WITH MEDICARE IN EACH AREA

Percent with Medicare	N. Y.	Mass.	Calif.	N. J.	Ohio	Fla.
76-100	2.6	0.0	0.0	0.0	0.4	18.2
51-75	0.3	0.0	4.9	0.9	0.0	47.4
26-50	29.6	41.9	19.3	43.2	25.4	23.2
< 25	65.8	58.1	73.9	55.9	72.4	11.2
Unknown	1.7	0.0	1.9	0.0	1.8	0.0

It is estimated that between one-half and three-fourths of the physicians in all areas except Florida have practices which include 25 percent or fewer Medicare patients. Florida is a notable exception in that about two-thirds of the physicians reported that over half their patients are covered by Medicare--it is estimated that 47 percent of the physicians in the Florida area have patient loads of which one-half to three-fourths are covered by Medicare, and about 18 percent indicate that Medicare patients make up over

three-fourths of their patient load. While Florida is recognized as a "retirement" state, it is a little surprising that this fact is apparently reflected by the physicians' practices in the rural area surveyed. In New York two-thirds of the physicians indicate that 25 percent or less of their patients are covered by Medicare. It is estimated that in California and Ohio almost three-fourths of the physicians have 25 percent or less of their patients covered by Medicare.

When this experience is viewed by specialty within area (Tables 8 through 13) a consistent pattern is observed for Massachusetts, California, Ohio, and Florida. The percent of physicians in each specialty clusters around the average for the area. New York and New Jersey, however, exhibit departures in experience. In New York (Table 8) only about six percent of the physicians in Specialty 2 report that between one-fourth and one-half of their patients are covered by Medicare as compared to an average of 30 percent for the area as a whole (Table 7). Similarly, only about 24 percent of the physicians in Specialty 1 indicate that less than a quarter of their patients are covered as compared to the average of 66 percent for all physicians in the area. A similar deviation is observed in New Jersey in the patterns for physicians in Specialty 1 and Specialty 2 (Table 11).

In terms of "time since graduation" (a measure of age which is highly correlated with income) no unexpected anomalies appear (Tables 14 through 19). While differences exist among these categories both within areas and among different areas, no consistent pattern emerges.

The percent of physicians' total patient load (Medicare and non-Medicare) by family income level in each area is shown in Tables 20 through 25. Physicians in all areas studied agree that most of their patients have annual family incomes of between \$5-15,000. The actual percentages estimated in this study range from 76 percent for Ohio to a high of 92 percent in New York. Both New York and California are notable in that over half of their patients are estimated to have family income in the higher level of \$10-15,000; the actual percentages were about 62 percent and 55 percent respectively. Conversely, over half of the physicians in Massachusetts and New Jersey reported that their patients were in the lower \$5-10,000 family income level. The percentages in this instance were 53 percent and 60 percent respectively. As is to be expected, the proportion of patients with a family income level of more than \$15,000 per year is small.

Table 8

PERCENT OF PHYSICIANS' PATIENTS WITH MEDICARE IN NEW YORK  
(BY SPECIALTY)

Percent of Patients	1	2	3	4
76-100	-	-	9.2	-
51-75	2.2	-	-	-
26-50	73.5	5.7	43.0	24.0
≤ 25	24.3	94.3	47.8	66.8
Unknown	-	-	-	9.2

Table 9

PERCENT OF PHYSICIANS' PATIENTS WITH MEDICARE IN MASSACHUSETTS  
(BY SPECIALTY)

Percent of Patients	1	2	3	4
76-100	-	-	-	-
51-75	-	-	-	-
26-50	34.5	60.3	37.6	29.9
≤ 25	65.5	39.7	62.4	70.1
Unknown	-	-	-	-

Table 10

PERCENT OF PHYSICIANS' PATIENTS WITH MEDICARE IN CALIFORNIA  
(BY SPECIALTY)

Percent of Patients	1	2	3	4
76-100	-	-	-	-
51-75	-	17.5	-	-
26-50	13.8	12.3	33.0	19.5
≤ 25	86.2	63.5	67.0	80.5
Unknown	-	6.7	-	-

Table 11

PERCENT OF PHYSICIANS' PATIENTS WITH MEDICARE IN NEW JERSEY  
(BY SPECIALTY)

Percent of Patients	1	2	3	4
76-100	-	-	-	-
51-75	-	-	3.2	-
26-50	7.5	76.1	44.6	30.9
≤ 25	92.5	23.9	52.2	69.1
Unknown	-	-	-	-

Table 12

PERCENT OF PHYSICIANS' PATIENTS WITH MEDICARE IN OHIO  
(BY SPECIALTY)

Percent of Patients	1	2	3	4
76-100	-	-	1.9	-
51-75	-	-	-	-
26-50	26.0	9.8	38.0	28.9
≤ 25	69.5	87.8	60.1	71.1
Unknown	4.5	2.4	-	-

Table 13

PERCENT OF PHYSICIANS' PATIENTS WITH MEDICARE IN FLORIDA  
(BY SPECIALTY)

Percent of Patients	1	2	3	4
76-100	12.9	20.8	25.2	10.3
51-75	46.8	50.0	44.5	51.2
26-50	16.0	20.1	30.3	26.2
≤ 25	24.3	9.1	-	12.3
Unknown	-	-	-	-

Table 14

PERCENT OF PHYSICIANS' PATIENTS WITH MEDICARE IN NEW YORK  
(BY YEARS SINCE GRADUATION)

Percent of Patients	1	2	3	4
76-100	-	8.8	-	-
51-75	-	-	1.8	-
26-50	44.0	9.8	18.0	49.6
≤ 25	56.0	81.4	80.2	22.5
Unknown	-	-	-	27.9

Table 15

PERCENT OF PHYSICIANS' PATIENTS WITH MEDICARE IN MASSACHUSETTS  
(BY YEARS SINCE GRADUATION)

Percent of Patients	1	2	3	4
76-100	-	-	-	-
51-75	-	-	-	-
26-50	46.3	28.2	48.3	40.6
≤ 25	53.7	71.8	51.7	59.4
Unknown	-	-	-	-

Table 16

PERCENT OF PHYSICIANS' PATIENTS WITH MEDICARE IN CALIFORNIA  
(BY YEARS SINCE GRADUATION)

Percent of Patients	1	2	3	4
76-100	-	-	-	-
51-75	7.5	-	7.5	-
26-50	9.7	40.0	11.3	21.6
≤ 25	82.8	60.0	73.7	78.4
Unknown	-	-	7.5	-

Table 17

PERCENT OF PHYSICIANS' PATIENTS WITH MEDICARE IN NEW JERSEY  
(BY YEARS SINCE GRADUATION)

Percent of Patients	1	2	3	4
76-100	-	-	-	-
51-75	-	-	6.9	-
26-50	40.2	48.3	56.7	-
≤ 25	59.8	51.7	36.4	100.0
Unknown	-	-	-	-

Table 18

PERCENT OF PHYSICIANS' PATIENTS WITH MEDICARE IN OHIO  
(BY YEARS SINCE GRADUATION)

Percent of Patients	1	2	3	4
76-100	-	-	-	5.2
51-75	-	-	-	-
26-50	40.1	5.3	28.4	12.2
≤ 25	59.9	94.7	71.6	63.2
Unknown	-	-	-	19.4

Table 19

PERCENT OF PHYSICIANS' PATIENTS WITH MEDICARE IN FLORIDA  
(BY YEARS SINCE GRADUATION)

Percent of Patients	1	2	3	4
76-100	10.4	28.7	10.0	19.6
51-75	61.0	50.0	28.8	25.7
26-50	12.8	17.6	45.4	39.8
≤ 25	15.8	3.7	15.8	14.9
Unknown	-	-	-	-

Table 20

PERCENT OF PHYSICIANS' PATIENTS BY FAMILY INCOME  
(NEW YORK)

Percent of Patients	Family Income Level (thousands of dollars)					Total (Percent)
	< 5	5-10	10-15	> 15	Mix	
76-100	-	-	2.6	-	-	2.6
51-75	-	0.3	-	-	-	0.3
26-50	-	17.0	12.5	-	1.0	30.5
< 25	-	12.3	47.4	3.9	3.0	66.6
Total	-	29.6	62.5	3.9	4.0	100.0

Table 21

PERCENT OF PHYSICIANS' PATIENTS BY FAMILY INCOME  
(MASSACHUSETTS)

Percent of Patients	Family Income Level (thousands of dollars)					Total (Percent)
	< 5	5-10	10-15	> 15	Mix	
76-100	-	-	-	-	-	-
51-75	-	-	-	-	-	-
26-50	7.2	15.3	18.3	-	4.6	45.4
< 25	2.7	38.1	10.9	-	2.9	54.6
Total	9.9	53.4	29.2	-	7.5	100.0

Table 22

PERCENT OF PHYSICIANS' PATIENTS BY FAMILY INCOME  
(CALIFORNIA)

Percent of Patients	Family Income Level (thousands of dollars)					Total (Percent)
	< 5	5-10	10-15	> 15	Mix	
76-100	-	-	-	-	-	-
51-75	-	-	5.0	-	-	5.0
26-50	-	5.9	11.5	-	2.3	19.7
< 25	3.3	21.1	38.9	7.3	4.7	75.3
Total	3.3	27.0	55.4	7.3	7.0	100.0

Table 23

PERCENT OF PHYSICIANS' PATIENTS BY FAMILY INCOME  
(NEW JERSEY)

Percent of Patients	Family Income Level (thousands of dollars)					Total (Percent)
	< 5	5-10	10-15	> 15	Mix	
76-100	-	-	-	-	-	-
51-75	0.9	-	-	-	-	0.9
26-50	1.2	26.0	12.2	2.4	-	41.8
≤ 25	2.7	34.3	16.0	1.2	3.1	57.3
Total	4.8	60.3	28.2	3.6	3.1	100.0

Table 24

PERCENT OF PHYSICIANS' PATIENTS BY FAMILY INCOME  
(OHIO)

Percent of Patients	Family Income Level (thousands of dollars)					Total (Percent)
	< 5	5-10	10-15	> 15	Mix	
76-100	-	0.5	-	-	-	0.5
51-75	-	-	-	-	-	-
26-50	-	13.4	6.9	3.0	2.5	25.8
≤ 25	5.9	26.1	29.3	5.1	7.3	73.7
Total	5.9	40.0	36.2	8.1	9.8	100.0

Table 25

PERCENT OF PHYSICIANS' PATIENTS BY FAMILY INCOME  
(FLORIDA)

Percent of Patients	Family Income Level (thousands of dollars)					Total (Percent)
	< 5	5-10	10-15	> 15	Mix	
76-100	3.0	4.8	6.7	3.2	-	17.7
51-75	3.2	16.5	20.1	2.1	2.9	44.8
26-50	-	13.1	10.3	-	1.9	25.3
≤ 25	4.9	6.1	0.6	-	0.6	12.2
Total	11.1	40.5	37.7	5.3	5.4	100.0

Family income levels of less than \$5,000 a year are also quite low for all areas. The percentages range from a low of zero percent for New York, which is probably a sampling anomaly, to a high of about 11 percent in Florida. Essex and Hudson Counties in New Jersey, selected to represent an urban area with a large low income component, is intermediate to this experience; only about five percent of the patients are believed to be from families with incomes below \$5,000 a year. It might be inferred, therefore, that poor families in general do not go to physicians in private practice.

The percent of physicians' patients by family income by specialty in each area is shown in Tables 26 through 31, in which the percentages mentioned in the body of the table represent the percentages of physicians in each specialty that responded in a particular way (percentages in each specialty sum to 100 percent). Thus, for example, it can be noted that in New York 9.5 percent of the physicians in Specialty 3 indicated that three-fourths or more of their patient load involved Medicare patients, and that their total patient load represents family income levels of \$10-15,000 per year. No significant differences were observed among specialties nor among times since graduation in this regard in the different areas.

#### B. Acceptance of Assignment

The frequency with which physicians accept assignment in each area is shown in Table 32. It is estimated that about four physicians out of five in New York accept assignment at least part of the time; of these physicians, however, only about 17 percent always accept assignment and about one-third of them accept assignment only in selected cases. One physician in five never accepts assignment.

It is well established that physicians in Massachusetts are characterized by a high rate of acceptance of assignment and it is estimated from this study that 95 percent of the physicians do at least part of the time. Massachusetts is unique among the areas studied in that two out of three physicians, it is estimated, always accept assignment for their Medicare patients. This is in contrast to the experience in New Jersey where the practice of always accepting assignment might be expected because of the presence in New Jersey of a large low income component; only one physician

Table 26

PERCENT OF PHYSICIANS' PATIENTS BY FAMILY INCOME BY SPECIALTY  
(NEW YORK)

Percent of Patients	Specialty	Family Income Level (thousands of dollars)				
		<5	5-10	10-15	> 15	Mix
76-100	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	9.5	-	-
	4	-	-	-	-	-
51-75	1	-	2.2	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-
26-50	1	-	22.8	50.7	-	-
	2	-	-	5.7	-	-
	3	-	40.0	1.1	-	3.4
	4	-	14.0	12.4	-	-
≤ 25	1	-	14.3	5.0	-	5.0
	2	-	25.3	53.5	9.8	5.7
	3	-	-	46.0	-	-
	4	-	-	73.6	-	-

Table 27

PERCENT OF PHYSICIANS' PATIENTS BY FAMILY INCOME BY SPECIALTY  
(MASSACHUSETTS)

Percent of Patients	Specialty	Family Income Level (thousands of dollars)				
		< 5	5-10	10-15	> 15	Mix
76-100	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-
51-75	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-
26-50	1	15.1	15.1	4.3	-	-
	2	7.2	10.7	32.6	-	15.8
	3	1.0	10.3	26.4	-	1.0
	4	-	43.8	-	-	-
≤ 25	1	-	46.1	19.4	-	-
	2	-	7.2	15.8	-	10.7
	3	-	60.3	1.0	-	-
	4	26.4	29.8	-	-	-

Table 28

PERCENT OF PHYSICIANS' PATIENTS BY FAMILY INCOME BY SPECIALTY  
(CALIFORNIA)

Percent of Patients	Specialty	Family Income Level (thousands of dollars)				
		< 5	5-10	10-15	> 15	Mix
76-100	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-
51-75	1	-	-	-	-	-
	2	-	-	18.7	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-
26-50	1	-	6.9	-	-	6.9
	2	-	-	13.1	-	-
	3	-	-	31.2	-	1.8
	4	-	19.5	-	-	-
≤ 25	1	-	36.5	42.8	-	6.9
	2	7.2	2.9	47.8	10.3	-
	3	1.8	24.9	21.7	14.1	4.5
	4	4.6	19.4	43.8	4.6	8.1

Table 29

PERCENT OF PHYSICIANS' PATIENTS BY FAMILY INCOME BY SPECIALTY  
(NEW JERSEY)

Percent of Patients	Specialty	Family Income Level (thousands of dollars)				
		< 5	5-10	10-15	> 15	Mix
76-100	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-
51-75	1	-	-	-	-	-
	2	-	-	-	-	-
	3	3.2	-	-	-	-
	4	-	-	-	-	-
26-50	1	4.8	2.7	-	-	-
	2	-	57.1	19.0	-	-
	3	-	23.9	20.7	-	-
	4	-	-	-	17.9	-
≤ 25	1	4.8	81.5	1.4	4.8	-
	2	4.9	14.1	4.9	-	-
	3	-	27.1	22.9	-	2.2
	4	-	9.8	54.4	-	17.9

Table 30

PERCENT OF PHYSICIANS' PATIENTS BY FAMILY INCOME BY SPECIALTY  
(OHIO)

Percent of Patients	Specialty	Family Income Level (thousands of dollars)				
		< 5	5-10	10-15	> 15	Mix
76-100	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	1.9	-	-	-
	4	-	-	-	-	-
51-75	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-
26-50	1	-	27.2	-	-	-
	2	-	-	7.5	-	2.5
	3	-	18.6	19.4	-	-
	4	-	7.9	-	13.1	7.9
≤ 25	1	-	41.8	31.0	-	-
	2	7.0	35.1	28.5	19.4	-
	3	6.4	5.6	31.4	-	16.7
	4	10.5	21.1	26.1	-	13.4

Table 31

PERCENT OF PHYSICIANS' PATIENTS BY FAMILY INCOME BY SPECIALTY  
(FLORIDA)

Percent of Patients	Specialty	Family Income Level (thousands of dollars)				
		< 5	5-10	10-15	> 15	Mix
76-100	1	-	-	14.4	-	-
	2	-	-	2.7	10.1	-
	3	8.4	8.4	5.3	3.1	-
	4	-	12.7	-	-	-
51-75	1	-	28.1	12.3	-	-
	2	10.1	10.1	24.8	10.1	-
	3	3.1	8.2	25.0	-	8.2
	4	-	23.0	16.8	-	-
26-50	1	-	18.0	-	-	-
	2	-	14.7	7.4	-	-
	3	-	8.4	16.6	-	5.3
	4	-	12.7	19.6	-	-
≤ 25	1	13.6	13.6	-	-	-
	2	4.6	2.7	-	-	2.7
	3	-	-	-	-	-
	4	-	10.7	4.5	-	-

Table 32

## FREQUENCY OF PHYSICIANS' ACCEPTING ASSIGNMENT IN EACH AREA

Accept Assignment (Percent of Time)	Area					
	N. Y.	Mass.	Calif.	N. J.	Ohio	Fla.
100	17.4	67.7	27.4	25.4	11.9	7.2
75	19.0	7.9	13.8	3.4	2.2	1.0
50	3.8	7.2	3.6	13.4	2.4	2.7
25	4.1	9.8	4.7	6.3	3.3	1.0
Select Cases	34.4	2.9	33.5	26.7	34.9	48.0
Never	20.6	4.5	17.0	20.0	45.3	39.2
In-patient Only	0.7	-	-	4.8	-	-
Total	100.0	100.0	100.0	100.0	100.0	100.0

out of four is estimated to always accept assignment. This experience is in sharp contrast to the experience of physicians in Ohio also, an area selected for study because of its traditionally low acceptance of assignment rate. Only about one physician in twenty in Worcester County, Massachusetts, is estimated to never accept assignment.

The observation that physicians in Ohio and Florida accept assignment less frequently than in most areas is borne out by the data presented in Table 32. While the frequency of accepting assignment in Ohio and Florida, 55 and 61 percent respectively, are higher than the net assignment rate indicated for these states in 1970, the fact that their net assignment rate is lower than for other areas studied is borne out.

In fact, with the exception of California, the relative rank of eligible physicians responding in this survey are the same as those represented in the statistics for 1970 in terms of frequency of accepting assignment. The most marked differences among areas are evidenced in Massachusetts, Ohio, and Florida.

In Ohio about 45 percent of the physicians never accept assignment at all and an additional 35 percent accept only in selected cases. Roughly the same pattern is evident in Florida where 39 percent of the physicians never accept assignment and 48 percent accept only in selected cases.

These same patterns, observed when the frequency of physicians accepting assignment is broken down by specialty within each area, are shown in Table 33. It should be noted that in Massachusetts physicians in Specialties 3 and 4 are the major contributors to a high acceptance of assignment. Between 93 and 100 percent of the physicians in these

Table 33

FREQUENCY OF PHYSICIANS' ACCEPTING ASSIGNMENT BY SPECIALTY  
IN EACH AREA

Area	Specialty	Accept Assignment (Percent of Time)							Total (Percent)
		100	75	50	25	Select Cases	Never	In-pat. only	
N. Y. (47)	1	5.1	5.1	-	-	84.8	-	5.0	100.0
	2	19.6	31.0	9.8	9.8	14.3	15.5	-	100.0
	3	26.2	3.3	-	1.0	51.2	18.3	-	100.0
	4	9.2	28.5	-	-	11.3	51.0	-	100.0
Mass. (52)	1	48.7	1.7	15.1	19.4	-	15.1	-	100.0
	2	45.9	23.5	9.7	14.3	6.6	-	-	100.0
	3	93.4	2.8	-	-	3.8	-	-	100.0
	4	100.0	-	-	-	-	-	-	100.0
Calif. (50)	1	10.5	10.5	-	10.5	31.9	36.6	-	100.0
	2	14.9	27.1	10.8	-	23.0	24.2	-	100.0
	3	50.7	-	1.8	1.8	41.1	4.6	-	100.0
	4	35.4	15.9	-	8.2	40.5	-	-	100.0
N. J. (41)	1	2.8	-	4.8	6.1	75.4	9.5	1.4	100.0
	2	33.2	-	28.8	4.8	19.0	14.2	-	100.0
	3	24.6	3.2	7.6	3.2	-	46.1	15.3	100.0
	4	46.6	15.8	7.4	15.1	15.1	-	-	100.0
Ohio (61)	1	-	-	-	-	22.8	77.2	-	100.0
	2	9.3	-	-	-	49.6	41.1	-	100.0
	3	19.0	6.5	-	3.8	42.4	28.3	-	100.0
	4	21.1	2.7	10.5	10.5	23.6	31.6	-	100.0
Fla. (63)	1	-	-	-	3.2	44.9	51.9	-	100.0
	2	-	9.2	-	-	36.6	54.2	-	100.0
	3	16.8	-	8.2	-	60.6	14.4	-	100.0
	4	10.3	-	-	-	42.9	46.8	-	100.0

specialties, respectively, accept assignment 100 percent of the time. This is in sharp contrast to the physicians in Specialties 1 and 2 who always accept assignment; their experience is only half that of physicians in Specialties 3 and 4. In Ohio, while 45 percent of physicians never accept assignment, physicians in Specialty 1 are a striking exception in that 77 percent of them never accept assignment. The pattern is reversed somewhat in Florida, where about 38 percent of all physicians never accept assignment, in that Specialties 1, 2, and 4 are roughly the same but in Specialty 3 only about 14 percent of the physicians never accept assignment. It is interesting to note also that physicians in Specialty 1 in both New York and New Jersey appear highly selective in their willingness to accept assignment. Over three-fourths of the physician population in Specialty 1 in New York and New Jersey accept assignment only in selected cases.

From Table 32 it was seen that the percent of physicians in each area who never accept assignment ranged from a low of about five percent in Massachusetts to about 39 percent in Florida and 45 percent in Ohio. This relatively small subset of physicians who indicated they never accept assignment were asked the question, "Why is it that you never accept assignment?" Some of them gave reasons which are discussed in Section C, Patient-Related Factors in Accepting Assignment and Section D, Program-Related Factors in Accepting Assignment. Physicians who never accept assignment and who responded to the question, however, did indicate three additional reasons, which are held most strongly by physicians in Ohio and Florida. About six out of ten physicians in Ohio and four out of ten physicians in Florida who never accept assignment simply reflect what is felt to be third-party interference in the doctor/patient relationship. Approximately ten percent of these physicians in Ohio and 40 percent in Florida include the fact that the full fee is not recovered as another reason assignment is never accepted. Similar to the first reason above in connotation, almost one physician in four in Ohio and one out of three in Florida who never accept assignment take the more traditional view that the patient is responsible for payment for services received. While these reasons were given by physicians in the other areas as well, those in Ohio and Florida outnumbered those in each of the other areas by factors of three or more.

As noted earlier, most physicians in each area, except in Florida, indicated that the majority of their patients were in the \$5-15,000 per

year family income level. Differences among physicians in the specialty groups for each area are observed from Tables 34 through 39. It should be noted that in each of these tables the entries for each specialty add up to 100 percent.

The experience patterns in the different areas are quite diffuse, but marked differences among specialties in each area are evident for the \$5-15,000 family income level. In New York, for example, significant differences are observed among physicians in different specialties who accept assignment only in selected cases; this is the practice of 84 percent of physicians in Specialty 1 and over 50 percent of those in Specialty 3; that is, those practicing general medicine and surgery. Physicians in Specialties 2 and 4, however, accept assignment in this circumstance only 14 and 11 percent of the time respectively. It is interesting to observe, also, that over 50 percent of the physicians in Specialty 4 never accept assignment as compared to other specialties which average about 17 percent acceptance.

Massachusetts evidences a completely different pattern among specialties. The overall assignment acceptance rate (accepting at least in selected cases) is about 95 percent. This high rate is confirmed also by noting that most physicians always accept assignment. Again, of physicians whose total patient load represents persons in the \$5-10,000 family income group, 95 percent in Specialty 3 always accept assignment as do 74 percent of those in Specialty 4. This is in contrast to less than one-half the physicians in Specialties 1 and 2 who always accept assignment.

Among physicians in New Jersey who accept assignment only in selected cases, those in Specialty 1 are outstanding in that three-fourths of them operate in this way whereas only one in five or fewer operate this way in the other specialties.

Whereas over 50 percent of the physicians in Specialty 4 in New York never accept assignment, it is the physicians in Specialty 1 in Ohio who are outstanding in this regard; three-fourths of them never accept assignment as compared to 34 percent of those in Specialty 2, 28 percent in Specialty 3 and only 13 percent of the physicians in Specialty 4 (\$5-10,000 family income level)

Differences among physicians' practices by specialty in California and Florida are too diffuse in this regard to draw any contrasts.

Table 34

FREQUENCY OF ACCEPTING ASSIGNMENT BY FAMILY INCOME LEVEL  
BY SPECIALTY IN EACH AREA  
(NEW YORK)

Accept Assignment	Specialty	Family Income Level (thousands of dollars)				
		< 5	5-10	10-15	> 15	Mix
100	1	-	-	5.1	-	-
	2	-	9.8	-	9.8	-
	3	-	1.1	19.1	-	3.4
	4	-	-	-	-	-
75	1	-	-	-	-	5.1
	2	-	9.8	21.2	-	-
	3	-	-	3.4	-	-
	4	-	14.0	17.4	-	-
50	1	-	-	-	-	-
	2	-	-	9.8	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-
25	1	-	-	-	-	-
	2	-	-	9.8	-	-
	3	-	-	1.1	-	-
	4	-	-	-	-	-
Selected Cases	1	-	32.9	51.8	-	-
	2	-	5.7	2.9	-	5.7
	3	-	38.9	14.1	-	-
	4	-	-	12.4	-	-
Never	1	-	-	-	-	-
	2	-	-	15.5	-	-
	3	-	-	18.9	-	-
	4	-	-	56.2	-	-
In-patient Only	1	-	5.1	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-

Table 35

FREQUENCY OF ACCEPTING ASSIGNMENT BY FAMILY INCOME LEVEL  
BY SPECIALTY IN EACH AREA  
(MASSACHUSETTS)

Accept Assignment	Specialty	Family Income Level (thousands of dollars)				
		< 5	5-10	10-15	> 15	Mix
100	1	-	44.4	4.3	-	-
	2	7.2	10.7	32.7	-	-
	3	-	70.7	24.4	-	1.0
	4	26.4	73.6	-	-	-
75	1	-	1.7	-	-	-
	2	-	-	15.8	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-
50	1	-	-	15.1	-	-
	2	-	7.2	-	-	3.4
	3	-	-	-	-	-
	4	-	-	-	-	-
25	1	-	15.1	4.3	-	-
	2	-	-	-	-	15.8
	3	-	-	-	-	-
	4	-	-	-	-	-
Selected Cases	1	-	-	-	-	-
	2	-	-	-	-	7.2
	3	1.0	-	2.9	-	-
	4	-	-	-	-	-
Never	1	15.1	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-
In-patient Only	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-

Table 36

FREQUENCY OF ACCEPTING ASSIGNMENT BY FAMILY INCOME LEVEL  
BY SPECIALTY IN EACH AREA  
(CALIFORNIA)

Accept Assignment	Specialty	Family Income Level (thousands of dollars)				
		< 5	5-10	10-15	> 15	Mix
100	1	-	10.5	-	-	-
	2	-	-	14.9	-	-
	3	1.8	25.4	9.3	9.7	4.6
	4	4.6	30.8	-	-	-
75	1	-	-	10.5	-	-
	2	6.7	-	20.4	-	-
	3	-	-	-	-	-
	4	-	-	11.3	4.6	-
50	1	-	-	-	-	-
	2	-	-	10.8	-	-
	3	-	-	1.8	-	-
	4	-	-	-	-	-
25	1	-	-	10.5	-	-
	2	-	-	-	-	-
	3	-	-	1.8	-	-
	4	-	8.2	-	-	-
Selected Cases	1	-	31.9	-	-	-
	2	-	2.7	10.8	9.5	-
	3	-	-	41.0	-	-
	4	-	-	32.4	-	8.1
Never	1	-	-	28.6	-	8.0
	2	-	-	24.2	-	-
	3	-	-	-	4.6	-
	4	-	-	-	-	-
In-patient Only	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-

Table 37

FREQUENCY OF ACCEPTING ASSIGNMENT BY FAMILY INCOME LEVEL  
BY SPECIALTY IN EACH AREA  
(NEW JERSEY)

Accept Assignment	Specialty	Family Income Level (thousands of dollars)				
		< 5	5-10	10-15	> 15	Mix
100	1	-	2.7	-	-	-
	2	4.9	28.3	-	-	-
	3	3.2	13.8	7.6	-	-
	4	-	9.8	26.8	-	-
75	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	3.2	-	-	-
	4	-	-	18.8	-	-
50	1	-	-	-	4.8	-
	2	-	23.9	4.9	-	-
	3	-	-	5.3	-	2.2
	4	-	-	8.8	-	-
25	1	4.8	-	1.3	-	-
	2	-	4.9	-	-	-
	3	-	3.2	-	-	-
	4	-	-	-	-	17.9
Selected Cases	1	-	75.4	-	-	-
	2	-	-	19.0	-	-
	3	-	-	-	-	-
	4	-	-	-	17.9	-
Never	1	4.8	4.8	-	-	-
	2	-	14.1	-	-	-
	3	-	30.7	15.4	-	-
	4	-	-	-	-	-
In-patient Only	1	-	1.4	-	-	-
	2	-	-	-	-	-
	3	-	-	15.4	-	-
	4	-	-	-	-	-

Table 38

FREQUENCY OF ACCEPTING ASSIGNMENT BY FAMILY INCOME LEVEL  
BY SPECIALTY IN EACH AREA  
(OHIO)

Accept Assignment	Specialty	Family Income Level (thousands of dollars)				
		< 5	5-10	10-15	> 15	Mix
100	1	-	-	-	-	-
	2	6.8	2.4	-	-	-
	3	-	5.7	13.2	-	-
	4	-	21.1	-	-	-
75	1	-	-	-	-	-
	2	-	-	-	-	-
	3	6.5	-	-	-	-
	4	-	-	-	-	2.7
50	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
	4	-	-	10.5	-	-
25	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	3.8	-	-	-
	4	10.5	-	-	-	-
Selected Cases	1	-	16.0	6.8	-	-
	2	-	3.7	31.5	12.1	2.4
	3	-	2.0	23.4	-	17.0
	4	-	-	10.5	13.1	-
Never	1	-	54.4	22.8	-	-
	2	-	28.2	6.1	6.8	-
	3	-	13.2	15.2	-	-
	4	-	7.9	5.2	-	18.5
In-patient Only	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-

Table 39

FREQUENCY OF ACCEPTING ASSIGNMENT BY FAMILY INCOME LEVEL  
BY SPECIALTY IN EACH AREA  
(FLORIDA)

Accept Assignment	Specialty	Family Income Level (thousands of dollars)				
		< 5	5-10	10-15	> 15	Mix
100	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	8.4	8.4	-	-
	4	-	12.7	-	-	-
75	1	-	-	-	-	-
	2	10.1	-	-	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-
50	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	8.2	-	-
	4	-	-	-	-	-
25	1	-	3.5	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-
Selected Cases	1	13.6	22.4	14.4	-	-
	2	4.6	17.4	5.4	10.1	2.7
	3	8.4	13.5	22.1	3.1	13.5
	4	-	18.9	21.3	-	-
Never	1	-	33.8	12.3	-	-
	2	-	10.1	29.5	10.1	-
	3	3.1	3.1	8.2	-	-
	4	-	27.5	19.6	-	-
In-patient Only	1	-	-	-	-	-
	2	-	-	-	-	-
	3	-	-	-	-	-
	4	-	-	-	-	-

### C. Patient-Related Factors in Accepting Assignment

A pre-designed list of eight patient-related factors was given to the physician and he was asked to respond to each as to whether he did or did not consider them and if he did consider them, how would he rank their importance: somewhat important, important, very important. The results are shown in Tables 40 through 45 for each of the areas studied: The last two factors in these tables, while volunteered as being a consideration by a very few sampled physicians, are included in the tables for completeness.

Let us consider the two or three factors in each area that most physicians consider in deciding whether to accept assignment or not. The most important single patient-related factor in accepting assignment is the patient's ability to pay. In four areas out of the six studied, a personal relationship with the patient was considered important. Timeliness of payment was an important consideration only in Massachusetts, and in California and New York whether the patient had Medicaid or not was an important factor considered by the physicians in this study. Let us consider these factors for each area in turn.

#### 1. New York

As seen from Table 40, two out of five physicians in New York considered the ability to pay as being important though they did not consider it as important as physicians in a number of the other areas studied. The clear implication with regard to this factor was that if the patient could pay the bill, the physician would tend to not accept assignment. As shown in Table 46, however, physicians who consider this a very important factor are predominantly those in Specialties 1 and 2; that is, physicians in general and family practice and those who practice specialties particularly pertinent to treatment of older patients. It is estimated that essentially all the physicians in Specialty 1 consider this factor very important and roughly two-thirds of those in Specialty 2. This is in sharp contrast to the physicians in Specialties 3 and 4 who considered it, by an large, only somewhat important.

The second most important factor considered is personal relationship with the patient which is considered by roughly one out of three physicians in New York. Of those physicians who consider this an important factor, almost two-thirds of them considered it only somewhat important. By implication, then, there was a slight tendency on

Table 40

PATIENT-RELATED FACTORS IN ACCEPTING ASSIGNMENT  
(NEW YORK)

Patient Factor	Not Considered	Considered	Importance		
			Somewhat Important	Important	Very Important
Ability to pay	58.2	41.8	54.2	11.7	34.1
Timeliness of payment	88.6	11.4	57.1	42.9	-
Personal relation with patient	66.9	33.1	61.4	22.9	15.7
Size of bill	73.1	26.9	14.0	50.5	35.5
Uncertainty of deduct. status	91.0	9.0	84.7	15.3	-
Patient with Medicaid	47.3	52.7	10.0	29.0	61.0
Comp. private ins.	69.5	30.5	16.1	67.9	16.0
Type of service or procedure	62.9	37.1	26.2	27.4	46.4
Patient hospitalized or not	93.7	6.3	-	-	100.0
Poor prognosis (death)	99.3	0.7	-	-	100.0

Table 41

PATIENT-RELATED FACTORS IN ACCEPTING ASSIGNMENT  
(MASSACHUSETTS)

Patient Factor	Not Considered	Considered	Importance		
			Somewhat Important	Important	Very Important
Ability to pay	61.4	38.6	29.8	20.1	50.1
Timeliness of payment	65.4	34.6	43.7	18.3	28.0
Personal relation with patient	77.8	22.2	30.2	9.3	60.5
Size of bill	76.6	23.4	31.9	68.1	-
Uncertainty of deduct. status	71.5	28.5	50.9	35.0	14.1
Patient with Medicaid	77.5	22.5	27.9	21.9	50.2
Comp. private ins.	79.8	20.2	41.3	38.9	19.8
Type of service or procedure	77.4	22.6	22.2	38.9	38.9
Patient hospitalized or not	97.9	2.1	87.2	-	12.8
Poor prognosis (death)	100.0	-	-	-	-

Table 42

PATIENT-RELATED FACTORS IN ACCEPTING ASSIGNMENT  
(CALIFORNIA)

Patient Factor	Not Considered	Considered	Importance		
			Somewhat Important	Important	Very Important
Ability to pay	43.1	56.9	24.0	26.2	39.8
Timeliness of payment	77.7	22.3	20.9	71.8	7.3
Personal relation with patient	54.6	45.4	24.8	44.7	30.5
Size of bill	66.2	33.8	11.7	81.5	6.8
Uncertainty of deduct. status	81.7	18.3	50.6	35.2	14.2
Patient with Medicaid	54.7	45.3	10.8	26.2	63.0
Comp. private ins.	61.5	38.5	23.7	52.9	23.4
Type of service or procedure	68.4	31.6	35.5	47.4	17.1
Patient hospitalized or not	98.3	1.7	-	-	100.0
Poor prognosis (death)	96.1	3.9	-	-	100.0

Table 43

PATIENT-RELATED FACTORS IN ACCEPTING ASSIGNMENT  
(NEW JERSEY)

Patient Factor	Not Considered	Considered	Importance		
			Somewhat Important	Important	Very Important
Ability to pay	46.1	53.9	42.6	28.8	28.6
Timeliness of payment	86.4	13.6	49.4	50.6	-
Personal relation with patient	76.7	23.3	15.8	36.9	47.3
Size of bill	62.2	37.8	75.6	12.1	12.3
Uncertainty of deduct. status	85.2	14.8	16.8	6.2	77.0
Patient with Medicaid	81.1	18.9	-	55.4	44.6
Comp. private ins.	87.4	12.6	21.2	66.6	12.2
Type of service or procedure	79.8	20.2	-	44.9	55.1
Patient hospitalized or not	98.2	1.9	-	-	100.0
Poor prognosis (death)	100.0	-	-	-	-

Table 44

PATIENT-RELATED FACTORS IN ACCEPTING ASSIGNMENT  
(OHIO)

Patient Factor	Not Considered	Considered	Importance		
			Somewhat Important	Important	Very Important
Ability to pay	62.3	37.7	32.6	5.0	62.4
Timeliness of payment	80.9	19.1	51.7	31.6	16.7
Personal relation with patient	79.7	20.3	12.2	25.3	62.5
Size of bill	84.7	15.3	44.1	15.4	40.5
Uncertainty of deduct. status	92.7	7.3	53.9	-	46.1
Patient with Medicaid	83.8	16.2	36.7	24.5	38.8
Comp. private ins.	84.8	15.2	6.2	41.2	56.6
Type of service or procedure	85.1	14.9	51.2	7.3	41.5
Patient hospitalized or not	99.4	0.6	-	100.0	-
Poor prognosis (death)	93.6	6.4	-	42.7	57.3

Table 45

PATIENT-RELATED FACTORS IN ACCEPTING ASSIGNMENT  
(FLORIDA)

Patient Factor	Not Considered	Considered	Importance		
			Somewhat Important	Important	Very Important
Ability to pay	62.0	38.0	14.4	13.7	71.9
Timeliness of payment	88.2	11.8	14.2	54.3	31.5
Personal relation with patient	80.7	19.3	25.9	32.5	41.6
Size of bill	84.4	15.6	17.8	33.6	48.6
Uncertainty of deduct. status	93.6	6.4	15.9	54.5	29.6
Patient with Medicaid	84.2	15.8	34.1	10.5	55.4
Comp. private ins.	91.7	8.3	38.9	21.3	39.8
Type of service or procedure	88.1	11.9	35.6	41.1	23.3
Patient hospitalized or not	100.0	-	-	-	-
Poor prognosis (death)	91.6	8.4	6.1	42.4	51.5

Table 46

PATIENT-RELATED FACTORS IN ACCEPTING ASSIGNMENT BY SPECIALTY  
(NEW YORK)

Patient Factor	Not Considered	Considered	Degree of Importance Given by Those Who Consider Factor											
			Somewhat Important				Important				Very Important			
			1	2	3	4	1	2	3	4	1	2	3	4
Ability to pay	58.2	41.8	-	11.3	89.2	100.0	-	25.0	-	-	100.0	63.7	1.8	-
Timeliness of payment	88.6	11.4	100.0	31.1	100.0	100.0	-	68.9	-	-	-	-	-	-
Personal relation with patient	66.9	33.1	100.0	8.1	97.6	100.0	-	55.9	-	-	-	36.1	2.4	-
Size of bill	73.1	26.9	8.9	14.0	24.3	-	-	86.0	-	-	91.1	-	75.7	100.0
Uncertainty of Deduct. status	91.0	9.0	-	77.7	76.5	100.0	-	22.3	23.5	-	-	-	-	-
Patient with Medicaid	47.3	52.7	41.1	5.3	-	-	7.3	42.1	3.9	71.6	51.6	52.6	96.1	28.4
Comp. private ins.	69.5	30.5	69.8	-	11.6	-	-	77.7	79.0	100.0	30.2	22.3	9.4	-
Type of service or procedure	62.9	37.1	46.3	-	12.3	66.3	-	55.9	34.0	-	53.7	44.1	53.8	33.7
Patient hospitalized or not	93.7	6.3	-	-	-	-	-	-	-	-	100.0	100.0	-	-
Poor prognosis (death)	99.3	0.7	-	-	-	-	-	-	-	-	100.0	-	-	-

the part of the physicians to accept assignment from patients who are well known to them and who might be hard pressed to pay for their services. It should be noted that while physicians in Specialties 1, 3, and 4 consider this factor only somewhat important, it was considered important or very important by about 90 percent of the physicians in Specialty 2.

The third factor which was considered by physicians in New York is whether the patient has Medicaid or not. About half the physicians consider this factor and surprisingly of those, 90 percent consider it important or very important. This is a particularly curious result in that, as it will be recalled, most of the patients in New York are estimated to be in the \$5-15,000 a year family income group. The two specialties which contribute in a major way to this result are Specialties 3 and 4 in which the physicians, almost without exception, consider this an important or very important factor.

## 2. Massachusetts

In Massachusetts as in New York, ability to pay was considered an important factor in deciding whether or not to take assignment. Of the physicians who considered this an important factor about one-half of them considered it to be very important. About one-third of them considered it important. Physicians in Specialty 4 considered it very important--87 percent in fact; and between one-half and two-thirds of the physicians in Specialties 1 and 2 were in agreement. This is in sharp contrast to physicians in Specialty 3, 96 percent of whom considered it only somewhat important (Table 47).

In contrast to New York where personal relationship with patient and patient with Medicare are important factors, physicians in Massachusetts considered timeliness of payment as the second most important factor. This is the only area in which physicians considered this factor as one of the most important two or three. This is not surprising, however, since Worcester County has a sizable, relatively low income component, and greater assurance of timely payment for services may result by accepting assignment. Physicians in Specialties 3 and 4 who considered this factor are essentially unanimous in considering timeliness of payment as only somewhat important. By way of contrast, about 95 percent of physicians in

Table 47

PATIENT-RELATED FACTORS IN ACCEPTING ASSIGNMENT BY SPECIALTY  
(MASSACHUSETTS)

Patient Factor	Not Considered	Considered	Degree of Importance Given by Those Who Consider Factor											
			Somewhat Important				Important				Very Important			
			1	2	3	4	1	2	3	4	1	2	3	4
Ability to pay	61.4	38.6	-	25.5	96.5	-	49.3	11.7	3.5	13.0	50.7	62.8	-	87.0
Timeliness of payment	65.4	34.6	5.0	46.5	100.0	100.0	44.3	10.0	-	-	50.7	43.5	-	-
Personal relation with patient	77.8	22.2	-	45.6	-	-	-	-	88.4	-	100.0	54.4	11.6	100.0
Size of bill	76.6	23.4	-	46.9	90.6	-	100.0	53.1	9.4	100.0	-	-	-	-
Uncertainty of Deduct. status	71.5	28.5	50.0	49.5	85.7	-	50.0	26.8	14.3	100.0	-	23.6	-	-
Patient with Medicaid	77.5	22.5	100.0	-	56.9	-	-	28.1	8.6	100.0	-	71.9	34.5	-
Comp. private ins.	79.8	20.2	50.0	-	100.0	-	50.0	40.3	-	100.0	-	59.7	-	-
Type of service or procedure	77.4	22.6	52.7	-	-	-	47.3	21.5	46.5	-	-	78.5	53.5	-
Patient hospitalized or not	97.9	2.1	-	100.0	-	-	-	-	-	-	-	-	100.0	-
Poor prognosis (death)	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Specialty 1 consider the factor important or very important as do roughly half of the physicians in Specialty 2.

### 3. California

In California it is estimated that the physicians consider ability to pay, personal relationship with patient, and patient with Medicaid about equally important factors in accepting assignment with a slight edge for those who feel that ability to pay is important (Table 48). Over half the physicians in this study area consider ability to pay to be important and it is of interest to note that while the responses by specialty were quite diffuse, of those physicians in Specialty 1 who considered this factor at all, essentially all of them considered it very important. This is true also in the case of the roughly 45 percent of the physicians who considered personal relationship with patient to be important.

About two out of five physicians considered whether patients had Medicaid or not to be important and of those, almost two-thirds of them considered it to be very important. This fairly high level of importance is due primarily to physicians in Specialty 1, essentially all of whom considered it very important or important.

### 4. New Jersey

In Essex and Hudson Counties, New Jersey, an urban area having a large low income component, the patient's ability to pay is the most important single factor in the physician's decision to accept assignment or not though the degree of importance physicians assign to this factor is fairly diffuse overall (Table 49). There is a marked contrast among the specialties. While about three-fourths of the physicians in Specialty 1 and Specialty 4 who consider this factor consider it only somewhat important, about three-fourths of the physicians in Specialty 2 consider it important as did three-fourths of those in Specialty 3. Thus, there is a significant difference among physicians in the different specialties in this regard which, it can be hypothesized, may be related to average size of bill.

The second most important patient factor considered by physicians in New Jersey is size of bill. This is an important factor to almost two out of five physicians though the importance attached to it is rather low. This is particularly interesting because only in New Jersey

Table 48

PATIENT-RELATED FACTORS IN ACCEPTING ASSIGNMENT BY SPECIALTY  
(CALIFORNIA)

Patient Factor	Not Considered	Considered	Degree of Importance Given by Those Who Consider Factor											
			Somewhat Important				Important				Very Important			
			1	2	3	4	1	2	3	4	1	2	3	4
Ability to pay	43.1	56.9	-	38.6	26.6	20.6	-	56.4	34.8	44.1	100.0	5.0	38.5	35.3
Timeliness of payment	77.7	22.3	-	53.5	-	22.9	-	46.5	100.0	54.5	-	-	-	22.6
Personal relation with patient	54.6	45.4	-	43.6	6.4	32.7	-	56.4	57.1	34.7	100.0	-	36.5	32.7
Size of bill	66.2	33.8	-	-	-	37.8	100.0	100.0	100.0	40.2	-	-	-	22.0
Uncertainty of Deduct. status	81.7	18.3	-	58.9	71.0	25.4	-	-	29.0	74.6	-	41.1	-	-
Patient with Medicaid	54.7	45.3	-	31.0	7.1	-	-	22.1	12.6	59.2	100.0	46.9	80.4	40.8
Comp. private ins.	61.5	38.5	100.0	-	38.0	-	-	88.3	37.5	67.3	-	11.7	24.5	32.6
Type of service or procedure	68.4	31.6	50.0	-	51.8	40.7	50.0	47.7	48.2	45.7	-	52.3	-	13.7
Patient hospitalized or not	98.3	1.7	-	-	-	-	-	-	-	-	-	-	-	100.0
Poor prognosis (death)	96.1	3.9	-	-	-	-	-	-	-	-	-	-	100.0	-

Table 49

PATIENT-RELATED FACTORS IN ACCEPTING ASSIGNMENT BY SPECIALTY  
(NEW JERSEY)

Patient Factor	Not Considered	Considered	Considered	Degree of Importance Given by Those Who Consider Factor											
				Somewhat Important				Important				Very Important			
				1	2	3	4	1	2	3	4	1	2	3	4
Ability to pay	46.1	53.9	89.4	-	-	7.6	75.8	7.3	72.3	17.9	-	3.3	27.7	74.5	24.2
Timeliness of payment	86.4	13.6	-	20.3	62.5	100.0	-	-	79.7	37.5	-	-	-	-	-
Personal relation with patient	76.7	23.3	-	10.2	47.0	-	-	43.6	50.1	-	-	56.4	39.8	53.0	100.0
Size of bill	62.2	37.8	89.4	71.1	27.6	100.0	100.0	7.3	14.4	28.2	-	3.3	14.4	44.2	-
Uncertainty of Deduct. status	85.2	14.8	-	-	-	-	65.8	-	-	100.0	-	100.0	100.0	-	34.2
Patient with Medicaid	81.1	18.9	-	-	-	-	-	-	83.1	29.4	31.9	-	16.9	70.6	68.1
Comp. private ins.	87.4	12.6	-	16.9	-	-	100.0	-	83.1	37.5	-	-	-	62.5	-
Type of service or procedure	79.8	20.2	-	-	-	-	-	-	66.3	9.3	100.0	100.0	33.7	90.7	-
Patient hospitalized or not	98.2	1.9	-	-	-	-	-	-	-	-	-	100.0	100.0	-	-
Poor prognosis (death)	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-	-

is this factor among the top ranking two or three that physicians consider in taking assignment. Physicians in Specialties 1, 2, and 4 seem to be in essential agreement that this factor is only somewhat important. Only about one physician in four in Specialty 3 considers it somewhat important and 44 percent of the physicians in this group consider it very important.

#### 5. Ohio

In Ohio where assignment rate generally is low, about 38 percent of the physicians consider the factor ability to pay. Of those physicians who do consider the factor at all, almost two-thirds of them consider it to be very important (Table 50). In contrast to the findings in Massachusetts discussed earlier, this factor appears to be negative in connotation for the physicians in Franklin and Fairfield Counties, Ohio. Assignment is not as frequently accepted because patients can more often pay for services. Physicians in Specialty 2 are outstanding in that overall 90 percent of them consider it to be a very important factor in their consideration whereas between one-third and one-half the physicians in Specialties 1, 3, and 4 are estimated to consider it very important.

Along with New York, California, and Florida, physicians in Ohio consider personal relationship with the patient to be among the top two or three factors to be considered. One physician in five considers this factor. Of these physicians, in turn, almost two-thirds consider it very important and 25 percent consider it important. Three out of four physicians in Specialties 2, 3, and 4 consider this factor to be very important whereas less than one out of three of the physicians in Specialty 1 would give this factor the same emphasis. The remaining 70 percent of the physicians in Specialty 1, however, do consider it to be important.

#### 6. Florida

One physician in five in the study in Florida indicated that he considers personal relationship with the patient as an important factor (Table 51). By specialty, the results are quite diffuse with two exceptions. Essentially all the physicians in Specialty 1 considered it only somewhat important, whereas essentially all the physicians in Specialty 2 considered it very important.

Table 50

PATIENT-RELATED FACTORS IN ACCEPTING ASSIGNMENT BY SPECIALTY  
(OHIO)

Patient Factor	Not Considered	Considered	Degree of Importance Given by Those Who Consider Factor											
			Somewhat Important				Important				Very Important			
			1	2	3	4	1	2	3	4	1	2	3	4
Ability to pay	62.3	37.7	57.1	8.0	25.7	66.7	-	-	15.2	-	42.9	92.0	59.1	33.3
Timeliness of payment	80.9	19.1	100.0	-	91.3	20.7	-	50.0	8.7	79.3	-	50.0	-	-
Personal relation with patient	79.7	20.3	-	-	25.9	20.7	70.1	23.3	-	-	29.9	76.7	74.1	79.3
Size of bill	84.7	15.3	-	-	100.0	-	-	-	-	50.0	-	100.0	-	50.0
Uncertainty of Deduct. status	92.7	7.3	-	-	100.0	100.0	-	-	-	-	100.0	-	-	-
Patient with Medicaid	83.8	16.2	65.6	-	50.0	-	-	-	31.6	44.5	35.4	100.0	18.4	55.5
Comp. private ins.	84.8	15.2	-	-	26.9	-	-	-	26.9	100.0	-	100.0	46.3	-
Type of service or procedure	85.1	14.9	100.0	-	87.8	-	-	-	12.2	20.7	-	100.0	-	79.3
Patient hospitalized or not	99.4	0.6	-	-	-	-	-	-	-	100.0	-	-	-	-
Poor prognosis (death)	93.6	6.4	-	-	-	-	-	50.0	-	100.0	100.0	50.0	100.0	-

Table 51

PATIENT-RELATED FACTORS IN ACCEPTING ASSIGNMENT BY SPECIALTY  
(FLORIDA)

Patient Factor	Not Considered	Considered	Degree of Importance Given by Those Who Consider Factor											
			Somewhat Important				Important				Very Important			
			1	2	3	4	1	2	3	4	1	2	3	4
Ability to pay	62.0	38.0	38.9	21.2	8.8	-	-	78.8	-	22.0	61.1	-	91.2	78.0
Timeliness of payment	88.2	11.8	-	100.0	-	26.8	100.0	-	42.0	73.2	-	-	58.0	-
Personal relation with patient	80.7	19.3	100.0	-	21.3	43.0	-	-	42.1	20.9	-	100.0	36.5	36.1
Size of bill	84.4	15.6	-	-	38.0	-	22.4	-	48.0	36.7	77.6	100.0	14.0	63.3
Uncertainty of Deduct. status	93.6	6.4	-	-	27.5	-	-	-	72.5	100.0	-	100.0	-	-
Patient with Medicaid	84.2	15.8	-	88.1	26.9	13.2	-	-	-	37.4	100.0	11.9	73.1	49.5
Comp. private ins.	91.7	8.3	-	21.2	60.7	-	-	-	39.3	-	-	78.8	-	100.0
Type of service or procedure	88.1	11.9	100.0	100.0	30.6	-	-	-	38.7	100.0	-	-	30.6	-
Patient hospitalized or not	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Poor prognosis (death)	96.6	8.4	-	11.9	-	-	-	44.1	-	54.0	-	44.1	100.0	45.6

#### D. Program-Related Factors in Accepting Assignment

In a manner identical with that used in eliciting physicians' responses to patient-related factors, their responses were sought with regard to eight program factors related to the Medicare program and its operation. Of those eight factors it should be noted that with a single exception of "assurance of payment" the factors are essentially negative in tone. That is, the amount of paperwork, the complexity of the program generally, the patient's lack of understanding of the program, the need to determine each patient's deductible status, etc., all mitigate against a physician's acceptance of assignment. Assurance of payment in the context of this question, on the other hand, would tend to encourage acceptance of assignment. Two additional factors, shown at the bottom of the tables, were volunteered by physicians as being considerations in their acceptance of assignment. While these two factors, reduction of fee and disallowance of prescribed treatment, were volunteered by a few sampled physicians only in New York and California, they are included in the tables for completeness.

From the results in Tables 52 through 57, it is seen that assurance of payment is consistently among the top two factors in every area studied with regard to its importance in the physician's decision to accept assignment. In four out of six areas studied, the fact that the fee allowance is less than the physician's charge was among the top three factors considered by physicians. Again, noting only the most salient factors, let us consider each area in turn.

##### 1. New York

It is estimated that in New York one physician in two does take assurance of payment into consideration in accepting assignment. The physicians who consider this factor were evenly divided in their assessment of its importance by specialty. Physicians in Specialty 1 and Specialty 4 considered this factor to be very important; it is seen from Table 58 that 79 percent of the physicians in Specialty 1 and about 58 percent of those in Specialty 4 considered the factor very important as compared to only one physician in five in Specialties 2 and 3. (It should be noted that in this table as in succeeding tables through Table 63, the percentages shown under "Degree of Importance" add up to 100 percent in each of the four specialty groups.)

Table 52

PROGRAM-RELATED FACTORS IN ACCEPTING ASSIGNMENT  
(NEW YORK)

Program Factor	Not Considered	Considered	Importance		
			Somewhat Important	Important	Very Important
Amount of paperwork	75.7	24.3	32.0	13.2	54.8
Assurance of payment	49.3	50.7	28.5	35.1	36.4
Complexity of program	63.0	37.0	36.7	46.2	17.1
Lack of understanding	76.9	23.1	50.7	17.6	31.7
Need to determine status	89.7	10.3	83.5	13.3	3.2
Delays in payment	89.2	10.8	47.9	31.7	20.4
Uncertainty in allowance	84.0	16.0	6.8	71.8	21.4
Allowance < charge	57.4	42.6	32.8	15.5	51.7
Reduction of fee	97.8	2.2	100.0	-	-
Disallowance of pre- scribed treatment	100.0	-	-	-	-

Table 53

PROGRAM-RELATED FACTORS IN ACCEPTING ASSIGNMENT  
(MASSACHUSETTS)

Program Factor	Not Considered	Considered	Importance		
			Somewhat Important	Important	Very Important
Amount of paperwork	67.2	32.8	20.9	23.1	56.0
Assurance of payment	57.9	42.1	40.1	44.5	15.4
Complexity of program	65.8	34.2	17.7	44.5	37.8
Lack of understanding	58.6	41.4	21.7	22.8	55.5
Need to determine status	72.4	27.6	19.1	56.1	24.8
Delays in payment	76.5	23.5	67.8	-	32.2
Uncertainty in allowance	63.1	36.9	21.0	23.9	55.1
Allowance < charge	65.9	34.1	36.2	15.1	48.7
Reduction of fee	100.0	-	-	-	-
Disallowance of pre- scribed treatment	100.0	-	-	-	-

Table 54

PROGRAM-RELATED FACTORS IN ACCEPTING ASSIGNMENT  
(CALIFORNIA)

Program Factor	Not Considered	Considered	Importance		
			Somewhat Important	Important	Very Important
Amount of paperwork	76.1	23.9	32.1	36.5	31.4
Assurance of payment	55.1	44.9	20.5	54.3	25.2
Complexity of program	71.9	28.1	11.2	34.8	54.0
Lack of understanding	52.6	47.4	59.3	18.3	22.4
Need to determine status	71.9	28.1	64.8	19.9	15.3
Delays in payment	62.8	37.2	29.6	41.4	29.0
Uncertainty in allowance	64.7	35.3	14.9	45.2	39.9
Allowance < charge	58.7	41.3	12.4	32.7	54.9
Reduction of fee	100.0	-	-	-	-
Disallowance of pre- scribed treatment	97.0	3.0	-	-	100.0

Table 55

PROGRAM-RELATED FACTORS IN ACCEPTING ASSIGNMENT  
(NEW JERSEY)

Program Factor	Not Considered	Considered	Importance		
			Somewhat Important	Important	Very Important
Amount of paperwork	93.3	6.7	13.7	54.2	32.1
Assurance of payment	74.7	25.3	40.0	26.5	33.5
Complexity of program	92.0	8.0	38.9	61.1	-
Lack of understanding	92.1	8.0	26.2	23.3	50.5
Need to determine status	90.7	9.3	42.8	9.8	47.4
Delays in payment	94.3	5.7	37.5	16.0	46.5
Uncertainty in allowance	87.7	12.3	21.9	5.2	72.9
Allowance < charge	65.7	34.3	3.4	9.7	86.9
Reduction of fee	100.0	-	-	-	-
Disallowance of pre- scribed treatment	100.0	-	-	-	-

Table 56

PROGRAM-RELATED FACTORS IN ACCEPTING ASSIGNMENT  
(OHIO)

Program Factor	Not Considered	Considered	Importance		
			Somewhat Important	Important	Very Important
Amount of paperwork	80.1	19.9	36.8	13.6	49.6
Assurance of payment	71.0	29.0	29.4	37.5	33.1
Complexity of program	77.7	22.3	-	26.2	73.8
Lack of understanding	77.6	22.4	20.6	14.8	64.6
Need to determine status	89.1	10.9	7.1	42.0	50.9
Delays in payment	85.8	14.2	33.3	44.3	22.4
Uncertainty in allowance	79.8	20.2	31.3	7.8	60.9
Allowance < charge	77.1	22.9	32.0	20.0	48.0
Reduction of fee	98.1	1.9	-	-	100.0
Disallowance of pre- scribed treatment	100.0	-	-	-	-

Table 57

PROGRAM-RELATED FACTORS IN ACCEPTING ASSIGNMENT  
(FLORIDA)

Program Factor	Not Considered	Considered	Importance		
			Somewhat Important	Important	Very Important
Amount of paperwork	84.1	15.9	20.7	70.1	9.2
Assurance of payment	73.6	26.4	25.7	41.6	25.7
Complexity of program	85.3	14.7	14.4	62.7	22.9
Lack of understanding	71.6	28.4	41.9	30.3	27.8
Need to determine status	90.3	9.7	52.6	47.4	-
Delays in payment	84.3	15.7	44.2	35.3	20.5
Uncertainty in allowance	73.7	26.3	21.7	23.8	54.5
Allowance < charge	67.1	32.9	27.1	35.6	37.3
Reduction of fee	99.5	0.5	-	-	100.0
Disallowance of pre- scribed treatment	100.0	-	-	-	-

Table 58  
PROGRAM-RELATED FACTORS IN ACCEPTING ASSIGNMENT BY SPECIALTY  
(NEW YORK)

Program Factor	Not Considered	Considered	Degree of Importance Given by Physicians Who Consider Factor											
			Somewhat Important				Important				Very Important			
			1	2	3	4	1	2	3	4	1	2	3	4
Amount of paperwork	75.7	24.3	-	-	80.2	42.1	16.5	26.7	3.8	-	83.5	73.3	16.0	57.9
Assurance of payment	49.3	50.7	12.4	-	61.2	41.8	8.6	79.0	16.7	-	79.0	21.0	22.1	58.2
Complexity of program	63.0	37.0	-	-	82.7	-	16.5	100.0	1.7	100.0	83.5	-	15.6	-
Lack of understanding	76.9	23.1	91.1	20.3	91.7	58.3	-	34.7	8.3	-	8.9	45.0	-	41.7
Need to determine status	89.7	10.3	69.0	87.4	50.0	-	-	12.6	50.0	-	31.0	-	-	-
Delays in payment	89.2	10.8	-	68.9	100.0	-	100.0	-	-	-	-	31.1	-	-
Uncertainty in allowance	84.0	16.0	-	9.1	-	-	8.9	90.9	100.0	-	91.1	-	-	-
Allowance < charge	57.4	42.6	47.7	38.8	-	100.0	4.6	30.6	2.2	-	47.7	30.6	97.8	-
Reduction of fee	97.8	2.2	-	100.0	-	-	-	-	-	-	-	-	-	-
Disallowance of prescribed treatment	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-

The second program feature considered important by physicians in New York was that the Medicare allowance is likely to be less than the physician's charge. Two out of five physicians in New York indicated that they consider this factor and half of them, in turn, indicated that it is a very important factor. In sharp contrast to the physicians in the other specialties, it is estimated that 98 percent of the physicians in Specialty 3 considered this to be a very important factor. Physicians in Specialty 4 were in contrast with this result in that essentially all of them indicated that the factor, while considered, was only somewhat important. It is interesting to note also that physicians in Specialty 1 were about evenly split between considering this factor either very important or only somewhat important; few of the physicians in Specialty 1 or in Specialty 3 held to the middle group.

## 2. Massachusetts

Two out of five physicians in Massachusetts apparently do consider assurance of payment. In contrast to the results from New York, however, while about two-thirds of the physicians in Specialty 4 consider this factor very important, only one physician in twenty in Specialty 1 considered it important.

Only in Massachusetts, California, and Florida was the lack of patient understanding of the program included by the physicians among the top two or three factors considered. In Massachusetts two out of five physicians indicated that this factor was considered and half of them in turn considered it to be very important (Table 53), while between 50 and 60 percent of the physicians in Specialties 1, 2, and 3 felt this to be a very important factor. Physicians in Specialty 4 were unanimous in this response (Table 59).

## 3. California

On the various program factors which physicians in California consider in their decision to accept assignment, the most important were assurance of payment, lack of patient understanding of the program, and the (high) likelihood that the allowance would be less than their charge (Table 54). Roughly two out of five physicians are estimated to consider these factors important. Essentially, all of the physicians in Specialty 1 considered assurance of payment as only being

somewhat important (Table 60) in contrast to physicians in the other specialties; three-fourths of whom indicated that this program factor was important or very important. Of those physicians who consider the factor "fee allowance is likely to be less than their charge" in California, three-fourths or more of the physicians in Specialties 1 and 2 indicated this to be very important.

#### 4. New Jersey

In New Jersey, Ohio, and Florida, though assurance of payment was still considered among the top two or three important program factors, the percentage of physicians that considered it was markedly lower than physicians in the other three areas. In each of these areas only one physician in four indicates that this factor is considered by him. It is estimated that essentially all of the physicians in Specialty 3 considered it either important or very important as did three-fourths of those physicians in Specialty 4; essentially all of the physicians in Specialty 2, however, considered it only somewhat important (Table 61).

In their decision to take assignment about one physician in three in New Jersey takes into consideration the likelihood that the fee allowance will be less than the charge. Most physicians in all four specialties consider this to be a very important factor, ranging from about 58 percent of the physicians in Specialty 3 to three-fourths in Specialty 2 and essentially all of the physicians in Specialty 1.

#### 5. Ohio

In contrast to the areas just discussed, physicians in Ohio give rather uniform consideration to each of the eight program factors (Table 46). Assurance of payment is a slight standout in that 29 percent of the physicians are estimated to consider it to be important. The degree of importance that physicians attach to this factor is quite diffuse also with a single exception: four out of five physicians in Specialty 1 consider this to be very important (Table 62).

#### 6. Florida

As in California, the most frequently considered program factors by physicians in Florida are: assurance of payment, lack of understanding, and the likelihood that the fee allowance is less than their charge (Table 47). Roughly one physician in four considered each of

Table 59

PROGRAM-RELATED FACTORS IN ACCEPTING ASSIGNMENT BY SPECIALTY  
(MASSACHUSETTS)

Program Factor	Not Considered	Considered	Degree of Importance Given by Physicians Who Consider Factor											
			Somewhat Important				Important				Very Important			
			1	2	3	4	1	2	3	4	1	2	3	4
Amount of paperwork	67.2	32.8	-	7.5	50.0	-	84.9	-	2.3	-	15.1	92.5	47.7	100.0
Assurance of payment	57.9	42.1	-	50.2	74.9	33.3	95.3	22.4	18.0	-	4.7	27.4	7.1	66.7
Complexity of program	65.8	34.2	14.8	17.0	23.3	-	62.9	15.9	73.7	100.0	22.3	67.1	3.0	-
Lack of understanding	58.6	41.4	-	36.4	27.4	-	43.7	11.4	15.6	-	56.3	52.2	57.0	100.0
Need to determine status	72.4	27.6	24.7	5.4	70.6	-	61.5	58.0	29.4	100.0	13.8	36.6	-	-
Delays in payment	76.5	23.5	100.0	55.9	72.6	-	-	-	-	-	-	44.1	27.4	100.0
Uncertainty in allowance	63.1	36.9	11.5	13.6	3.8	87.0	48.7	13.6	11.5	13.0	39.8	72.8	84.7	-
Allowance < charge	65.9	34.1	24.8	25.6	80.8	-	37.6	-	-	100.0	37.6	74.4	19.2	-
Reduction of fee	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Disallowance of prescribed treatment	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 60

PROGRAM-RELATED FACTORS IN ACCEPTING ASSIGNMENT BY SPECIALTY  
(CALIFORNIA)

Program Factor	Not Considered	Considered	Degree of Importance Given by Physicians Who Consider Factor											
			Somewhat Important				Important				Very Important			
			1	2	3	4	1	2	3	4	1	2	3	4
Amount of paperwork	76.1	23.9	-	79.3	31.9	-	-	-	61.1	46.5	-	20.7	7.0	53.5
Assurance of payment	55.1	44.9	100.0	19.8	19.3	7.3	-	57.6	53.6	61.7	-	22.6	27.1	31.0
Complexity of program	71.9	28.1	-	7.0	43.0	-	-	25.3	57.0	41.3	100.0	67.7	-	58.7
Lack of understanding	52.6	47.4	67.0	46.9	60.9	64.3	-	24.8	16.8	23.8	33.0	28.3	22.3	11.9
Need to determine status	71.9	28.1	100.0	71.7	81.5	36.6	-	-	-	63.4	-	28.3	18.5	-
Delays in payment	62.8	37.2	-	19.4	43.0	40.7	100.0	39.0	49.1	30.7	-	41.6	7.9	28.6
Uncertainty in allowance	64.7	35.3	-	-	27.1	30.8	-	30.8	67.0	53.4	-	69.2	5.9	15.8
Allowance < charge	58.7	41.3	-	4.3	6.3	27.3	-	19.7	87.4	27.2	100.0	76.0	6.3	45.6
Reduction of fee	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Disallowance of prescribed treatment	97.0	3.0	-	-	-	-	-	-	-	-	-	100.0	-	-

Table 61

PROGRAM-RELATED FACTORS IN ACCEPTING ASSIGNMENT BY SPECIALTY  
(NEW JERSEY)

Program Factor :	Not Considered	Considered	Degree of Importance Given by Physicians Who Consider Factor											
			Somewhat Important				Important				Very Important			
			1	2	3	4	1	2	3	4	1	2	3	4
Amount of paperwork	93.3	6.7	-	-	58.8	-	-	-	-	100.0	-	100.0	41.2	-
Assurance of payment	74.7	25.3	-	100.0	-	15.9	-	-	33.9	50.0	-	-	66.1	34.1
Complexity of program	92.0	8.0	-	-	41.2	50.0	-	100.0	58.8	50.0	-	-	-	-
Lack of understanding	92.1	8.0	-	-	37.5	31.9	100.0	100.0	-	-	-	-	62.5	68.1
Need to determine status	90.7	9.3	-	100.0	-	100.0	-	-	17.2	-	-	-	82.8	-
Delays in payment	94.3	5.7	-	50.0	41.2	-	-	-	58.8	-	100.0	50.0	-	-
Uncertainty in allowance	87.7	12.3	-	-	49.5	31.9	-	-	20.8	-	100.0	100.0	29.7	68.1
Allowance < charge	65.7	34.3	-	-	-	15.9	-	25.5	41.2	15.9	100.0	74.5	58.8	68.2
Reduction of fee	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-
Disallowance of prescribed treatment	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 62

PROGRAM-RELATED FACTORS IN ACCEPTING ASSIGNMENT BY SPECIALTY  
(OHIO)

Program Factor	Not Considered	Considered	Degree of Importance Given by Physicians Who Consider Factor											
			Somewhat Important				Important				Very Important			
			1	2	3	4	1	2	3	4	1	2	3	4
Amount of paperwork	80.1	19.9	100.0	39.0	-	-	-	-	45.1	20.7	-	61.0	54.9	79.3
Assurance of payment	71.0	29.0	-	11.4	23.3	64.5	18.6	32.0	48.9	35.5	81.4	56.6	27.7	-
Complexity of program	77.7	22.3	-	-	-	-	18.6	-	45.1	55.8	81.4	100.0	54.9	44.2
Lack of understanding	77.6	22.4	-	50.0	21.8	-	18.6	-	39.1	-	81.4	50.0	39.1	100.0
Need to determine status	89.1	10.9	100.0	-	-	-	-	-	100.0	55.8	-	100.0	-	44.2
Delays in payment	85.8	14.2	-	50.0	26.6	17.1	100.0	-	73.4	82.9	-	50.0	-	-
Uncertainty in allowance	79.8	20.2	-	-	31.4	88.5	-	-	18.9	11.5	100.0	100.0	49.7	-
Allowance < charge	77.1	22.9	65.6	-	21.0	44.2	-	-	21.0	55.8	34.4	100.0	58.0	-
Reduction of fee	98.1	1.9	-	-	-	-	-	-	-	-	-	100.0	-	-
Disallowance of prescribed treatment	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-

the first two factors to be important and one physician in three indicated the third factor was considered. Only in the case of lack of patient understanding were there some interesting differences among specialties in terms of the relative importance given this factor. Three out of four physicians in Specialty 3 considered the factor to be important or very important and roughly one-half of the physicians who considered this factor at all in Specialties 1 and 2 responded in a like manner (Table 63). Of the physicians in Specialty 4, by contrast, two out of three of them indicated that to their mind this factor was only somewhat important.

#### E. The \$50 Deductible

Table 64 shows the extent to which those physicians who accept assignment at least some of the time in each area experience difficulty in collecting the \$50 deductible. In this table the frequency of encountering difficulty is broken down into six classes: 25 percent of the time, 50 percent of the time, 75 percent of the time, 100 percent of the time, only in select cases, and never. Differences among the different areas studied in this regard are rather interesting.

##### 1. New York

In New York, where almost 80 percent of the physicians accept assignment at least some of the time, 93 percent of these physicians indicated that difficulty is never or only occasionally encountered. Thus, only one physician in ten in New York indicates that he has trouble in collecting the \$50 deductible and even then does not often encounter this difficulty. Of all the physicians in the four specialty groups, 82 percent of the physicians in Specialty 3 indicate difficulty in select cases as shown in Table 65. It is estimated that only about one physician in five (18 percent) in this specialty never has difficulty.

##### 2. Massachusetts

Massachusetts is characterized by a high rate of acceptance of assignment as we have seen. It is interesting to note, therefore, that three out of five physicians either never or only in select cases experienced difficulty in collecting the \$50 annual deductible. It is estimated, however, that one physician in four (26 percent) experienced difficulty at least half the time, and about six percent always had

Table 63

PROGRAM-RELATED FACTORS IN ACCEPTING ASSIGNMENT BY SPECIALTY  
(FLORIDA)

Program Factor	Not Considered	Considered	Degree of Importance Given by Physicians Who Consider Factor											
			Somewhat Important				Important				Very Important			
			1	2	3	4	1	2	3	4	1	2	3	4
Amount of paperwork	84.1	15.9	13.8	44.1	-	100.0	63.8	44.1	100.0	-	22.4	11.8	-	-
Assurance of payment	73.6	26.4	61.1	-	12.8	20.9	-	100.0	67.5	43.0	38.9	-	19.7	36.1
Complexity of program	85.3	14.7	-	9.0	-	100.0	74.0	66.7	72.5	-	26.0	24.3	27.5	-
Lack of understanding	71.6	28.4	50.0	44.1	25.3	64.4	43.1	11.8	25.3	35.6	6.9	44.1	49.4	-
Need to determine status	90.3	9.7	-	50.0	27.5	100.0	-	50.0	72.5	-	-	-	-	-
Delays in payment	84.3	15.7	77.6	78.8	21.2	-	22.4	-	46.0	100.0	-	21.2	32.8	-
Uncertainty in allowance	73.7	26.3	31.8	50.0	13.7	-	-	-	29.7	63.9	68.2	50.0	56.6	36.1
Allowance < charge	67.1	32.9	43.0	36.6	26.2	-	-	-	53.6	52.9	47.0	63.4	20.2	47.1
Reduction of fee	99.5	0.5	-	-	-	-	-	-	-	-	-	100.0	-	-
Disallowance of prescribed treatment	100.0	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 64

PERCENT OF PHYSICIANS ACCEPTING ASSIGNMENT WHO EXPERIENCE  
DIFFICULTY IN COLLECTING \$50 DEDUCTIBLE BY FREQUENCY OF DIFFICULTY IN EACH AREA

Area	Frequency of Difficulty (Percent of Time)						Total (Percent)
	100	75	50	25	Select Cases	Never	
N. Y.	-	-	2.3	4.6	47.5	45.6	100.0
Mass.	5.9	9.6	10.2	13.0	15.9	45.4	100.0
Calif.	11.4	7.6	3.2	9.6	20.9	47.2	100.0
N. J.	1.1	9.8	3.9	3.8	34.5	46.1	100.0
Ohio	1.8	3.8	6.7	11.5	30.0	46.2	100.0
Fla.	-	7.1	5.7	17.9	41.4	25.0	100.0

Table 65

PERCENT OF PHYSICIANS EXPERIENCING DIFFICULTY IN COLLECTING \$50 DEDUCTIBLE  
 BY FREQUENCY OF DIFFICULTY BY SPECIALTY  
 FREQUENCY OF DIFFICULTY (PERCENT OF TIME)

Area	Specialty	100	75	50	25	Select Cases	Never	Total
N. Y.	1	-	-	5.0	10.0	25.1	60.1	100.0
	2	-	-	3.1	6.3	23.5	67.0	100.0
	3	-	-	-	-	82.1	17.9	100.0
	4	-	-	-	-	-	100.0	100.0
Mass.	1	5.1	20.3	22.9	22.9	6.0	22.9	100.0
	2	6.6	14.3	6.6	9.1	25.0	38.4	100.0
	3	-	-	7.3	12.0	12.6	68.1	100.0
	4	18.0	-	-	4.8	22.8	54.5	100.0
Calif.	1	12.7	-	-	22.3	25.7	39.3	100.0
	2	-	23.1	-	12.7	7.0	57.2	100.0
	3	-	6.6	1.8	4.8	26.5	60.3	100.0
	4	35.8	-	11.4	-	24.3	28.6	100.0
N. J.	1	1.5	-	-	6.5	2.9	89.2	100.0
	2	-	16.5	-	5.7	33.5	44.4	100.0
	3	5.9	5.9	19.8	-	68.4	-	100.0
	4	-	17.8	-	-	53.9	28.4	100.0
Ohio	1	-	-	-	13.0	29.9	57.1	100.0
	2	6.2	-	10.4	20.5	32.1	30.8	100.0
	3	-	11.5	11.5	-	24.3	52.6	100.0
	4	-	-	-	15.3	34.7	50.0	100.0
Fla.	1	-	13.1	-	41.4	8.1	37.4	100.0
	2	-	25.4	-	5.4	20.0	49.2	100.0
	3	-	-	15.8	9.6	58.7	16.0	100.0
	4	-	-	9.4	19.4	64.4	6.8	100.0

difficulty (Table 64). In Ohio, selected for its low rate of assignment acceptance, only 12 percent of the physicians are estimated to have difficulty at least half the time, and only about one physician in 50 always had difficulty. As compared to the Massachusetts experience, this is not unexpected. By specialty (Table 65) it is seen that the experience of physicians in Specialty 1 in Massachusetts is somewhat unique among the four specialties. Only 29 percent of these physicians either never or only in select cases had difficulty in collecting the \$50 deductible; related to this experience, of course, is the observation that almost half the physicians in Specialty 1 are estimated to experience difficulty at least half the time which is in sharp contrast with physicians in the other specialties. The experiences of physicians in Specialty 4 exhibit an even more startling contrast; it is estimated that almost one physician in five (18 percent) is estimated to always have difficulty though for no apparent reasons.

### 3. California and Florida

In both California and Florida roughly two-thirds of the physicians indicate that they had little difficulty in collecting the \$50 deductible; either never or only occasionally. It is estimated that one physician in three, therefore, had experience to the contrary. Even so, the experience in these two areas offers an interesting contrast since about 83 percent of the physicians in the highly urban sample area of California accept assignment at least some of the time whereas in the essentially rural sample area of Florida only 61 percent of the physicians do.

In California, about 28 percent of the physicians in Specialty 4 indicate that they never had difficulty in this regard as compared to 40-60 percent for the other three specialties. Contrary to the experience of physicians in the other specialties slightly over one-third of those in Specialty 4 are estimated to always have difficulty in collecting the \$50 deductible. By way of contrast, as much as 58 percent of the physicians in Specialty 3 in Florida and 64 percent of those in Specialty 4 indicated that they had difficulty only in select cases and 10-15 percent experienced difficulty as much as half the time.

#### 4. New Jersey

The sample area in New Jersey, it will be recalled, was selected because of its urban setting with a large low income component; also it is estimated that 80 percent of the office-based physicians who engage in direct patient care accept assignment at least some of the time. Surprisingly four out of five physicians, it is estimated, either never or only in selected cases have difficulty in collecting the annual \$50 deductible. Of the remaining 20 percent of the physicians, only one percent indicated they always experienced difficulty. Experience in this regard, however, is quite disparate among physicians in different specialties (Table 65). About 30 percent of those in Specialty 3, for example, indicated they experienced difficulty at least half the time, and none of the physicians in the sample (and therefore in the population, it is estimated) could say they never experience difficulty. This is in sharp contrast to the experience of physicians in the more rural area of Florida. However, the physicians in Florida can be said to experience less difficulty in this regard simply because they are not as prone to accept assignment in the first place.

#### 5. Ohio

Physicians in Ohio evidenced the lowest rate of acceptance of assignment of the six areas studied--55 percent. Three out of four physicians in this area are estimated to never experience difficulty in collecting the annual deductible or experience difficulty only in selected cases. About 12 percent, or one physician in eight, is estimated to experience difficulty half or more of the time, and these physicians are in Specialties 2 and 3.

#### F. Special Techniques for Handling the Deductible

In each area physicians were asked if they had adopted special techniques for handling the deductible under Medicare. The results are shown in Tables 66 and 67 below. The most salient result portrayed in Table 66 is that so few physicians have special techniques for handling the deductible, or, perhaps, employ these techniques so infrequently as to consider them not worth mentioning; this is particularly true of the physicians in the New York, Ohio, and Florida areas. Approximately one physician in eight in Massachusetts and New Jersey indicates he does use special techniques as does one out of four or five physicians in California.

Table 66

PERCENT OF PHYSICIANS WHO HAVE MEDICARE PATIENTS WHO HAVE SPECIAL TECHNIQUES  
FOR HANDLING THE \$50 DEDUCTIBLE IN EACH AREA

	No	Yes
New York	96.0	0.4
Massachusetts	87.4	12.6
California	77.0	23.0
New Jersey	88.3	11.7
Ohio	96.9	3.1
Florida	99.4	0.6

Table 67

SPECIAL TECHNIQUES FOR HANDLING THE \$50 DEDUCTIBLE IN EACH AREA  
(PERCENT OF PHYSICIANS WHO HAVE SPECIAL TECHNIQUES)

Technique	N. Y. (0.4)	Mass. (12.6)	Calif. (23.0)	N. J. (11.7)	Ohio (3.1)	Fla. (0.6)
1. Take special pains to make sure patient understands			32.3	53.6		
2. Hold bill so another physician will collect \$50		22.0	4.1	30.1	75.3	
3. Refuse to see patient again until \$50 is paid			11.6			
4. Bill small charges to patient until \$50 is reached		58.5		7.9		100.0
5. Bill family			13.0			
6. Avoid Medicare patient (usually \$50 not collected)	100.0		13.8			
7. Repeated billing		19.5	7.2			
8. Accept partial payment			10.0			
9. Special form for collection from carrier			8.0			
10. Collection agency				5.5		
11. Try to work out budget payments				2.9	24.7	

The specific techniques physicians volunteered that they use are shown in Table 67 along with number of physicians estimated to use them in each area as a percent of those physicians who indicated special techniques are used at all. No special meaning can be ascribed to each percentage, per se, because the number of physicians in the sample indicating use of special techniques is small; extreme cases of this effect are noted in New York and Florida, for example, in which 100 percent in each instance is the outcome of only one physician's response.

It is of interest, however, to note just what special techniques are used and the relative frequency with which they are used in each area. The physicians in California appear to be most versatile in employing special techniques for handling the \$50 annual deductible.

#### G. The 20 Percent Co-Insurance

In Table 68, we see the percentages of the physicians accepting assignment who experience difficulty in collecting co-insurance by frequency of difficulty in each of the six areas. In general, it is seen that of those physicians who accept assignment at least some of the time, their experience is not as variable from one area to another as in the case of collecting the \$50 deductible. However, New York and Massachusetts remain unique in that physicians in New York experience the least difficulty with 86 percent of them never or only in select cases experiencing any difficulty, and physicians in Massachusetts experience the most difficulty; only 60 percent of the physicians indicate that they never have difficulty or, if they do, only in select cases.

Physicians in California, New Jersey, Ohio, and Florida have essentially the same experiences. The percentage of physicians indicating they never have difficulty or have difficulty only in select cases, ranges from 67 percent in California to 70 percent in Ohio and Florida. In New York, however, 93 percent of the physicians in Specialty 3 experience difficulty in collecting the 20 percent co-insurance in selected cases; this is as opposed to 23 percent, 39 percent, and 32 percent for physicians in Specialties 1, 2, and 4 respectively (Table 69). New York is unique also as compared to the other areas in this study in that no physicians indicate that they had difficulty more than one-fourth of the time.

In Massachusetts, where the rate of acceptance of assignment is highest among the six areas studied, there is indication that the physicians

Table 68

PERCENT OF PHYSICIANS ACCEPTING ASSIGNMENT WHO EXPERIENCE  
DIFFICULTY IN COLLECTING 20 PERCENT CO-INSURANCE BY  
FREQUENCY OF DIFFICULTY IN EACH AREA

Area	Frequency of Difficulty (Percent of Time)						Total (Percent)
	100	75	50	25	Select Cases	Never	
N. Y.	-	-	-	13.3	50.9	35.8	100.0
Mass.	5.9	10.0	18.5	4.9	15.5	45.2	100.0
Calif.	6.6	7.7	-	18.9	38.3	28.5	100.0
N. J.	4.6	7.1	6.9	13.5	20.8	47.1	100.0
Ohio	-	4.3	15.4	10.5	35.7	34.1	100.0
Fla.	1.7	3.0	7.7	17.0	36.6	34.0	100.0

also have the most difficulty in collecting the 20 percent co-insurance. In contrast to New York, 55 percent of the physicians in Specialty 3 indicated that they never have any trouble and about 12 percent indicate that only in select cases do they have difficulty (Table 69). The most difficulty in collecting co-insurance in Massachusetts is experienced by physicians in Specialty 2 where over half of the physicians have difficulty more than 25 percent of the time and 13 percent, or slightly more than one in ten, always has difficulty in collecting co-insurance. In the other four areas, physicians experience is rather mixed among the four specialty groups. Only in California and in Ohio was the experience of physicians in the different specialties notable. In California almost 28 percent of the physicians in Specialty 4 indicated that they always have difficulty in collecting the 20 percent co-insurance and in Ohio over half of the physicians in Specialty 1 indicated that they have difficulty about one-half of the time.

#### H. Special Techniques for Handling Co-Insurance

In each area physicians were asked if they had adopted special techniques for handling the co-insurance provision under Medicare. The results, presented in Tables 70 and 71, should be viewed with the same limitations

Table 69

PERCENT OF PHYSICIANS EXPERIENCING DIFFICULTY IN COLLECTING 20 PERCENT  
CO-INSURANCE BY FREQUENCY OF DIFFICULTY BY SPECIALTY  
FREQUENCY OF DIFFICULTY (PERCENT OF TIME)

Area	Specialty	100	75	50	25	Select Cases	Never	Total
N. Y.	1	-	-	-	7.1	22.9	70.0	100.0
	2	-	-	-	13.1	38.8	48.1	100.0
	3	-	-	-	-	93.4	6.6	100.0
	4	-	-	-	68.1	31.9	-	100.0
Mass.	1	7.7	5.1	22.9	-	23.7	40.6	100.0
	2	13.2	14.3	14.3	14.3	9.7	34.1	100.0
	3	-	6.3	26.5	-	12.6	54.6	100.0
	4	-	18.0	2.4	4.8	18.0	56.9	100.0
Calif.	1	-	-	-	9.6	55.4	35.0	100.0
	2	-	26.6	-	12.7	14.2	46.5	100.0
	3	-	-	-	40.7	47.8	11.4	100.0
	4	27.6	4.6	-	8.2	35.6	24.0	100.0
N. J.	1	5.0	-	-	11.5	2.9	80.6	100.0
	2	5.7	16.5	-	11.3	27.8	38.7	100.0
	3	5.9	-	19.8	15.8	30.0	28.5	100.0
	4	-	8.7	17.7	18.7	27.5	27.4	100.0
Ohio	1	-	-	57.1	13.0	29.9	-	100.0
	2	-	4.1	26.7	-	22.0	47.2	100.0
	3	-	9.4	2.7	-	46.0	42.2	100.0
	4	-	-	-	36.3	40.8	22.9	100.0
Fla.	1	8.1	8.1	-	32.9	5.0	45.9	100.0
	2	-	-	-	4.7	26.8	67.5	100.0
	3	-	-	15.8	19.1	39.3	25.8	100.0
	4	-	9.4	-	-	81.2	9.4	100.0

in mind as noted for special techniques for handling the \$50 deductible discussed in the preceding section.

Table 70

PERCENT OF PHYSICIANS WHO HAVE MEDICARE PATIENTS WHO HAVE SPECIAL TECHNIQUES FOR HANDLING THE CO-INSURANCE IN EACH AREA

	No	Yes
New York	96.2	3.8
Massachusetts	96.0	4.0
California	88.1	11.9
New Jersey	95.3	4.7
Ohio	88.2	11.8
Florida	99.4	0.6

Table 71

SPECIAL TECHNIQUES FOR HANDLING CO-INSURANCE IN EACH AREA  
(PERCENT OF PHYSICIANS WHO HAVE SPECIAL TECHNIQUES)

Technique	N. Y. (3.8)	Mass. (4.0)	Calif. (11.9)	N. J. (4.7)	Ohio (11.8)	Fla. (0.6)
1. Ask for deposit			3.7			
2. Ask for token payment/ monthly payment	100.0		13.7			
3. Collection agency				20.8	13.7	
4. Repeated billing		100.0				
5. Be sure patient under- stands beforehand			46.8	7.2	4.1	
6. Special forms			15.5	52.6		
7. Do not bill for it			20.3	19.4	27.0	
8. Fill out all forms for patient					55.2	100.0

Generally, fewer physicians have special techniques for handling co-insurance than for handling the deductible, and only California and Ohio stand out in this regard; about one physician in eight in these areas indicate they use special techniques. Of the eight techniques employed, it is observed that roughly half the physicians in California simply take special steps to be sure the patient understands his responsibility for payment of the 20 percent co-insurance. Roughly half the physicians in Ohio, on the other hand, apparently fill out all forms for their patients.

#### I. Billing for the Deductible but not Co-Insurance

The physicians were also asked whether they ever just billed for the \$50 deductible, accept assignment, and do not bill the patient for the co-insurance. Their responses are represented in Table 72 in which the physicians in each area were first divided into those who accept assignment 50 percent of the time or more, and those who accept assignment less than 50 percent of the time. It should be noted that in this table the percent of physicians who accept assignment adds up to 100 percent in each of the six areas.

It is evident that this is not a common practice among physicians in any of the areas studied. However, physicians in California and New Jersey are both notable in this regard. Of those physicians in California who, on occasion, do accept assignment 21 percent indicate that they always engage in this practice, and another 13 percent indicate that they do sometimes. In New Jersey, on the other hand, about one physician in ten is estimated to always engage in this practice, and a surprising 41 percent of the physicians in New Jersey indicate that they do in select cases.

It is interesting to note that there is indication in California that 55 percent of the physicians in Specialty 4 engage in this practice, and 41 percent of those in Specialty 3 do also; only 18 percent and 12 percent in Specialties 2 and 1 respectively bill for the \$50 deductible, accept assignment, and do not bill for the co-insurance (Table 75). This is a complete turn-about from the experience of physicians in New Jersey where only about nine percent of the physicians in Specialty 4 engage in this practice and physicians in Specialties 3, 2, and 1 indicate that 34 percent, 78 percent, and 89 percent of them respectively engage in this practice (Table 76).

Table 72

FREQUENCY WITH WHICH PHYSICIANS BILL FOR \$50 DEDUCTIBLE, ACCEPT ASSIGNMENT, AND DO NOT BILL FOR CO-INSURANCE IN EACH AREA (BASED ON PHYSICIANS WHO ACCEPT ASSIGNMENT)

Frequency (Percent)	N. Y.			Mass.			Calif.			N. J.			Ohio			Fla.		
	Accept Assign > 50%	< 50%		Accept Assign > 50%	< 50%		Accept Assign > 50%	< 50%		Accept Assign > 50%	< 50%		Accept Assign > 50%	< 50%		Accept Assign > 50%	< 50%	
Always	-	-		4.1	-		18.8	2.1		-	11.3		1.2	6.0		-	1.6	
75	5.1	-		1.1	-		-	-		-	2.0		6.4	-		3.1	-	
50	-	-		1.4	-		3.8	-		2.0	3.5		-	1.8		-	-	
25	-	-		0.9	-		-	-		-	1.2		-	-		-	-	
Selected Cases	-	-		9.2	4.2		7.3	2.1		24.2	17.3		0.9	1.8		-	-	
Never	45.9	49.0		70.0	9.2		24.0	41.9		18.3	20.2		22.5	59.3		16.3	79.0	

Table 73

FREQUENCY WITH WHICH PHYSICIANS BILL FOR \$50 DEDUCTIBLE, ACCEPT ASSIGN-  
MENT, AND DO NOT BILL FOR CO-INSURANCE BY SPECIALTY  
AND BY YEARS SINCE GRADUATION IN EACH AREA  
(NEW YORK)

Frequency (Percent)	Specialty				Years Since Graduation			
	1	2	3	4	1	2	3	4
100	-	-	-	-	-	-	-	-
75	-	11.6	-	-	-	15.3	-	-
50	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-
Selected Cases	-	6.8	-	-	-	-	16.1	-
Never	100.0	81.6	100.0	81.2	100.0	84.7	83.9	72.1
No Answer	-	-	-	18.8	-	-	-	27.9
In-patient Only	-	-	-	-	-	-	-	-

Table 74

FREQUENCY WITH WHICH PHYSICIANS BILL FOR \$50 DEDUCTIBLE, ACCEPT ASSIGN-  
MENT, AND DO NOT BILL FOR CO-INSURANCE BY SPECIALTY  
AND BY YEARS SINCE GRADUATION IN EACH AREA  
(MASSACHUSETTS)

Frequency (Percent)	Specialty				Years Since Graduation			
	1	2	3	4	1	2	3	4
100	7.7	4.1	2.8	-	-	5.4	17.6	26.6
75	4.0	-	-	-	-	-	10.6	-
50	5.1	-	-	-	-	5.4	-	-
25	-	-	2.8	-	-	-	8.5	-
Selected Cases	2.0	35.3	-	18.0	17.9	7.7	5.3	-
Never	81.2	60.7	93.3	82.0	82.1	81.5	58.0	65.6
No Answer	-	-	0.9	-	-	-	-	7.8
In-patient Only	-	-	-	-	-	-	-	-

Table 75

FREQUENCY WITH WHICH PHYSICIANS BILL FOR \$50 DEDUCTIBLE, ACCEPT ASSIGN-  
MENT, AND DO NOT BILL FOR CO-INSURANCE BY SPECIALTY  
AND BY YEARS SINCE GRADUATION IN EACH AREA  
(CALIFORNIA)

Frequency (Percent)	Specialty				Years Since Graduation			
	1	2	3	4	1	2	3	4
100	12.7	3.5	26.1	35.5	12.1	27.1	20.4	25.0
75	-	-	-	-	-	-	-	-
50	-	14.2	-	-	9.3	-	-	-
25	-	-	-	-	-	-	-	-
Selected Cases	-	-	14.7	19.4	5.1	18.2	5.7	-
Never	87.3	82.3	59.2	45.1	73.5	54.7	73.8	75.0
No Answer	-	-	-	-	-	-	-	-
In-patient Only	-	-	-	-	-	-	-	-

Table 76

FREQUENCY WITH WHICH PHYSICIANS BILL FOR \$50 DEDUCTIBLE, ACCEPT ASSIGN-  
MENT, AND DO NOT BILL FOR CO-INSURANCE BY SPECIALTY  
AND BY YEARS SINCE GRADUATION IN EACH AREA  
(NEW JERSEY)

Frequency (Percent)	Specialty				Years Since Graduation			
	1	2	3	4	1	2	3	4
100	5.0	27.8	-	8.7	10.8	18.9	8.7	-
75	-	-	9.9	-	-	6.9	-	-
50	5.0	5.7	9.9	-	-	19.0	-	-
25	-	-	5.9	-	-	-	6.9	-
Selected Cases	79.2	44.4	8.3	-	55.9	6.8	44.7	50.0
Never	10.8	16.5	60.0	91.3	33.3	41.5	39.7	50.0
No Answer	-	-	-	-	-	-	-	-
In-patient Only	-	5.7	-	-	-	6.8	-	-

Table 77

FREQUENCY WITH WHICH PHYSICIANS BILL FOR \$50 DEDUCTIBLE, ACCEPT ASSIGN-  
MENT, AND DO NOT BILL FOR CO-INSURANCE BY SPECIALTY  
AND BY YEARS SINCE GRADUATION IN EACH AREA  
(OHIO)

Frequency (Percent)	Specialty				Years Since Graduation			
	1	2	3	4	1	2	3	4
100	-	24.6	-	-	13.9	-	-	16.3
75	-	-	9.7	11.6	7.7	9.0	-	-
50	-	6.2	-	-	-	-	11.3	-
25	-	-	-	-	-	-	-	-
Selected Cases	-	-	8.6	-	-	-	10.9	12.2
Never	100.0	69.2	81.7	88.4	78.4	91.0	77.8	71.5
No Answer	-	-	-	-	-	-	-	-
In-patient Only	-	-	-	-	-	-	-	-

Table 78

FREQUENCY WITH WHICH PHYSICIANS BILL FOR \$50 DEDUCTIBLE, ACCEPT ASSIGN-  
MENT, AND DO NOT BILL FOR CO-INSURANCE BY SPECIALTY  
AND BY YEARS SINCE GRADUATION IN EACH AREA  
(FLORIDA)

Frequency (Percent)	Specialty				Years Since Graduation			
	1	2	3	4	1	2	3	4
100	6.6	-	-	-	-	-	7.7	-
75	-	20.0	-	-	8.2	-	-	-
50	-	-	-	-	-	-	-	-
25	-	-	-	-	-	-	-	-
Selected Cases	-	-	-	-	-	-	-	-
Never	93.4	80.0	100.0	100.0	91.8	100.0	92.3	100.0
No Answer	-	-	-	-	-	-	-	-
In-patient Only	-	-	-	-	-	-	-	-

#### J. Varying Charges

Physicians in this study who accept assignment at least some of the time were asked if they ever vary the charge for their most frequently provided service; those who responded in the affirmative were asked also to indicate the factors that influence the charge made. Physicians who indicated that they never accept assignment were not asked these questions.

Based upon the responses, it is estimated that 80-85 percent of the physicians in all areas except Monroe County, New York, never vary their charge; about 40 percent apparently do vary their charge in the New York area studied where, it will be recalled, the Medicare plan is generally accepted as full payment.

Physicians in each area who do vary their charge were consistent in indicating that the two most important factors influencing them are: (1) the patient's financial ability to pay and (2) the nature of the patient visit (complications, time spent with the patient, patient's age, etc.). Less important factors, by roughly a factor of two, include the length of time the person has been a patient, professional courtesy, what insurance coverage the patient carries, and the frequency of return visits.

#### K. Private Insurance Programs

It is known that private health insurance programs use different reimbursement methods than Medicare. The physicians were asked if they think one or more of these approaches is preferable to the method used under Medicare. Those physicians who responded in the affirmative were asked how the other method would, first, benefit him or, second, benefit his Medicare patients.

Only about one-third of the physicians in each area responded that some private plans would be preferred. Most physicians had no opinion. The results to follow, therefore, are very fragmentary. Of the physicians who did respond affirmatively, the great majority in each area, 70-88 percent, indicated that one or more of the private insurance company methods of reimbursement would benefit them by being less confusing and not leave the impression with some patients of being overcharged (this latter point is related to the statement now sent to the patient for his information). Only half the responding physicians in California agree with this; 19 percent of the physicians in California indicated that they felt faster,

Table 79

CHANGES IN MEDICAL PRACTICE RELATED TO THE INTRODUCTION  
OF MEDICARE--PERCENT OF PHYSICIANS (NEW YORK)

Medicare has resulted in:	Not Considered	Considered	Percent of Physicians Who "Considered" the Factor	
			Agree	Disagree
Overall increase in number of patients	15.8	84.2	43.5	56.5
More consultations and referrals	12.7	87.3	34.4	65.6
Fewer bad debts	27.7	72.3	53.6	46.4
Increase in hours worked	11.2	88.8	36.6	63.4
Less free medical service	10.2	89.8	73.3	26.7
Increase in supplementary services	19.5	80.5	45.8	54.2
Increase in charges per service (all patients)	10.2	89.8	12.1	87.9
Increase in physician's net income	21.9	78.1	45.8	54.2

Table 80

CHANGES IN MEDICAL PRACTICE RELATED TO THE INTRODUCTION  
OF MEDICARE--PERCENT OF PHYSICIANS (MASSACHUSETTS)

Medicare has resulted in:	Not Considered	Considered	Percent of Physicians Who "Considered" the Factor	
			Agree	Disagree
Overall increase in number of patients	17.4	82.6	47.7	52.3
More consultations and referrals	28.0	72.0	23.1	76.9
Fewer bad debts	69.1	30.9	69.1	30.1
Increase in hours worked	20.9	79.1	53.4	46.6
Less free medical service	5.2	94.8	88.6	11.4
Increase in supplementary services	28.4	71.6	31.6	68.4
Increase in charges per service (all patients)	17.4	82.6	22.8	77.2
Increase in physician's net income	26.5	73.5	60.7	39.3

Table 81

CHANGES IN MEDICAL PRACTICE RELATED TO THE INTRODUCTION  
OF MEDICARE--PERCENT OF PHYSICIANS (CALIFORNIA)

Medicare has resulted in:	Not Considered	Considered	Percent of Physicians Who "Considered" the Factor	
			Agree	Disagree
Overall increase in number of patients	23.3	76.7	32.3	67.7
More consultations and referrals	7.5	92.5	35.4	64.6
Fewer bad debts	14.5	85.5	39.0	61.0
Increase in hours worked	17.0	83.0	31.9	68.1
Less free medical service	14.9	85.1	71.8	28.2
Increase in supplementary services	10.0	90.0	31.2	68.8
Increase in charges per service (all patients)	9.5	90.5	5.1	94.9
Increase in physician's net income	25.0	75.0	23.2	76.8

Table 82

CHANGES IN MEDICAL PRACTICE RELATED TO THE INTRODUCTION  
OF MEDICARE--PERCENT OF PHYSICIANS (NEW JERSEY)

Medicare has resulted in:	Not Considered	Considered	Percent of Physicians Who "Considered" the Factor	
			Agree	Disagree
Overall increase in number of patients	11.3	88.7	43.9	56.1
More consultations and referrals	17.9	82.1	34.6	65.4
Fewer bad debts	4.9	95.1	74.3	25.7
Increase in hours worked	26.1	73.9	36.7	63.3
Less free medical service	13.3	86.7	99.3	0.7
Increase in supplementary services	10.8	89.2	41.8	58.2
Increase in charges per service (all patients)	7.8	92.2	12.5	87.5
Increase in physician's net income	36.7	63.3	49.6	50.4

Table 83

CHANGES IN MEDICAL PRACTICE RELATED TO THE INTRODUCTION  
OF MEDICARE--PERCENT OF PHYSICIANS (OHIO)

Medicare has resulted in:	Not Considered	Considered	Percent of Physicians Who "Considered" the Factor	
			Agree	Disagree
Overall increase in number of patients	20.8	79.2	26.4	73.6
More consultations and referrals	10.9	89.1	34.4	65.6
Fewer bad debts	25.4	74.6	39.4	60.1
Increase in hours worked	6.5	93.5	31.9	68.1
Less free medical service	11.2	88.8	61.1	38.9
Increase in supplementary services	22.9	77.1	23.0	77.0
Increase in charges per service (all patients)	7.1	92.9	4.4	95.6
Increase in physician's net income	12.9	87.1	24.5	75.5

Table 84

CHANGES IN MEDICAL PRACTICES RELATED TO THE INTRODUCTION  
OF MEDICARE--PERCENT OF PHYSICIANS (FLORIDA)

Medicare has resulted in:	Not Considered	Considered	Percent of Physicians Who "Considered" the Factor	
			Agree	Disagree
Overall increase in number of patients	15.3	84.7	60.8	39.2
More consultations and referrals	20.4	79.6	52.6	47.4
Fewer bad debts	21.1	79.9	58.2	41.8
Increase in hours worked	16.3	83.7	54.2	45.8
Less free medical service	22.7	77.3	75.0	25.0
Increase in supplementary services	15.2	84.8	50.3	49.7
Increase in charges per service (all patients)	16.7	83.3	20.5	79.5
Increase in physician's net income	18.4	81.6	45.4	54.6

more complete reimbursement would result and another 17 percent felt they would benefit by greater flexibility of charge. In Massachusetts and Ohio, the areas of high and low acceptance of assignment rates respectively, physicians were more prone to include reduction of clerical time as a benefit (about 11 percent and 16 percent respectively).

With regard to how their Medicare patients would benefit, it is estimated that most eligible physicians in each area felt that a better doctor/patient relationship would result (75-93 percent except in California). Sixty-three percent of the physicians in California apparently agree but 30 percent of them were equally divided between two other perceived benefits to their patients: the belief that the patient would not have to pay as much out-of-pocket, and the conviction that physicians would accept more Medicare patients (if certain changes were made).

#### L. Effects of Medicare on Medical Practice

Near the end of the questionnaire an attempt was made to obtain the attitude of physicians as to whether Medicare has, in fact, had any effect on medical practice per se. It is recognized, of course, that other societal factors have been at work since Medicare was instituted in 1966, that have brought about changes in medical practice. The physicians were asked to think in terms of the effects of Medicare over and above other influences on the American medical practice and were asked whether they strongly agreed, agreed, disagreed, or strongly disagreed with each of the eight statements. The results, in terms of a simple dichotomy of either agree or disagree with each of these eight statements, are presented in Tables 79 through 84 for each of the areas studied. The data in these tables reflect the thinking of all physicians surveyed, since whether they accept assignment or not is not germane to this question. Results are shown by specialty in each area in Tables 85 through 92 in which physician responses to the idea that Medicare has resulted in fewer bad debts, less free medical service, an increase in charges per service for all patients, and in an increase in physicians' net income are of particular note.

In four areas, New York, Massachusetts, New Jersey, and Florida, it is estimated that between half and three-fourths of the eligible physicians agree with the statement that Medicare has resulted in fewer bad debts.

Table 85

CHANGES IN MEDICAL PRACTICE RELATED TO THE INTRODUCTION OF MEDICARE BY SPECIALTY--  
PERCENT OF PHYSICIANS (NEW YORK)

Medicare has resulted in:	Not Considered	Considered	Agree				Disagree			
			1	2	3	4	1	2	3	4
Overall increase in number of patients	15.8	84.2	19.8	44.3	58.1	37.4	80.2	55.7	41.9	62.6
More consultations and referrals	12.7	87.3	-	25.2	54.7	51.7	100.0	74.8	45.3	48.3
Fewer bad debts	27.7	72.3	80.8	59.3	53.2	28.0	19.2	40.7	46.8	72.0
Increase in hours worked	11.2	88.8	28.5	46.0	28.9	34.6	71.5	54.0	71.1	65.4
Less free medical service	10.2	89.8	92.8	74.2	68.1	63.7	7.2	25.8	31.9	36.3
Increase in supple- mentary services	19.5	80.5	58.2	44.6	28.4	62.9	41.8	55.4	71.6	37.1
Increase in charges per service (all patients)	10.2	89.8	5.5	10.4	12.1	20.5	94.5	89.6	87.9	79.5
Increase in physician's net income	21.9	78.1	41.1	46.2	46.6	46.1	59.9	53.8	53.4	53.9

Table 86

CHANGES IN MEDICAL PRACTICE RELATED TO THE INTRODUCTION OF MEDICARE BY SPECIALTY--  
PERCENT OF PHYSICIANS (MASSACHUSETTS)

Medicare has resulted in:	Not Considered	Considered	Agree				Disagree			
			1	2	3	4	1	2	3	4
Overall increase in number of patients	17.4	82.6	26.8	73.0	62.3	-	73.2	27.0	37.7	100.0
More consultations and referrals	28.0	72.0	20.1	-	49.0	-	79.9	100.0	51.0	100.0
Fewer bad debts	69.1	30.9	79.8	76.1	33.3	100.0	20.2	23.9	66.7	-
Increase in hours worked	20.9	79.1	55.9	56.8	59.4	34.1	44.1	43.2	40.6	65.9
Less free medical service	5.2	94.8	69.9	92.9	100.0	100.0	30.1	7.1	-	-
Increase in supple- mentary services	28.4	71.6	39.1	12.1	35.7	55.8	60.9	87.9	64.3	44.2
Increase in charges per service (all patients)	17.4	82.6	24.6	23.1	23.2	18.4	75.4	76.9	76.9	81.6
Increase in physician's net income	26.5	73.5	50.0	64.8	57.3	100.0	50.0	35.2	42.7	-

Table 87

CHANGES IN MEDICAL PRACTICE RELATED TO THE INTRODUCTION OF MEDICARE BY SPECIALTY--  
PERCENT OF PHYSICIANS (CALIFORNIA)

Medicare has resulted in:	Not Considered	Considered	Agree				Disagree			
			1	2	3	4	1	2	3	4
Overall increase in number of patients	23.3	76.7	14.5	15.9	40.2	64.1	85.5	84.1	59.8	35.9
More consultations and referrals	7.5	92.5	10.4	34.7	52.0	51.7	89.6	65.3	48.0	48.3
Fewer bad debts	14.5	85.5	29.3	35.8	49.4	43.8	70.7	64.2	50.6	56.2
Increase in hours worked	17.0	83.0	24.5	36.2	47.0	21.2	75.5	63.8	53.0	78.9
Less free medical service	14.9	85.1	72.5	61.0	90.0	64.0	27.5	39.0	10.0	36.0
Increase in supple- mentary services	10.0	90.0	44.4	24.4	21.0	32.7	55.6	75.6	79.0	67.3
Increase in charges per service (all patients)	9.5	90.5	7.6	-	5.3	8.9	92.4	100.0	94.7	91.1
Increase in physician's net income	25.0	75.0	27.4	15.1	43.9	-	72.6	84.9	56.1	100.0

Table 88

PERCENT OF MEDICAL PRACTICE RELATED TO THE INTRODUCTION OF MEDICARE BY SPECIALTY--  
PERCENT OF PHYSICIANS (NEW JERSEY)

Medicare has resulted in:	Not Considered	Considered	Agree				Disagree			
			1	2	3	4	1	2	3	4
Overall increase in number of patients	11.3	88.7	17.9	25.0	74.7	58.6	82.1	75.0	25.3	41.4
More consultations and referrals	17.9	82.1	5.6	37.2	47.9	50.1	94.4	62.8	52.1	49.9
Fewer bad debts	4.9	95.1	11.1	90.3	100.0	100.0	88.9	9.7	-	-
Increase in hours worked	26.1	73.9	17.0	46.9	50.0	34.7	83.0	53.1	50.0	65.3
Less free medical service	13.3	86.7	97.1	100.0	100.0	100.0	2.9	-	-	-
Increase in supple- mentary services	10.8	89.2	17.9	50.0	33.1	89.3	82.1	50.0	66.9	10.7
Increase in charges per service (all patients)	7.8	92.2	5.0	15.7	22.6	-	95.0	84.3	77.4	100.0
Increase in physician's net income	36.7	63.3	8.8	56.6	71.6	78.5	91.2	43.4	28.4	21.5

Table 89

PERCENT OF MEDICAL PRACTICE RELATED TO THE INTRODUCTION OF MEDICARE BY SPECIALTY--  
PERCENT OF PHYSICIANS (OHIO)

Medicare has resulted in:	Not Considered	Considered	Agree				Disagree			
			1	2	3	4	1	2	3	4
Overall increase in number of patients	20.8	79.2	35.8	42.7	22.2	3.5	64.2	57.3	77.8	96.5
More consultations and referrals	10.9	89.1	28.7	55.0	16.3	36.8	71.3	45.0	83.7	63.2
Fewer bad debts	25.4	74.6	37.0	44.3	36.0	38.3	63.0	55.7	64.1	61.7
Increase in hours worked	6.5	93.5	35.8	54.8	21.0	13.4	64.2	45.2	79.0	86.6
Less free medical service	11.2	88.8	66.4	65.8	60.2	50.0	33.6	34.3	39.3	50.0
Increase in supplementary services	22.9	77.1	34.0	14.7	5.6	38.2	66.0	85.3	94.4	61.8
Increase in charges per service (all patients)	7.1	92.9	6.8	-	-	11.4	93.2	100.0	100.0	88.6
Increase in physician's net income	12.9	87.1	7.8	28.7	39.1	23.6	92.2	71.3	60.9	76.4

Table 90

PERCENT OF MEDICAL PRACTICE RELATED TO THE INTRODUCTION OF MEDICARE BY SPECIALTY--  
PERCENT OF PHYSICIANS (FLORIDA)

Medicare has resulted in:	Not Considered	Considered	Agree				Disagree			
			1	2	3	4	1	2	3	4
Overall increase in number of patients	15.3	84.7	51.2	59.9	69.5	65.7	48.8	40.1	30.5	34.3
More consultations and referrals	20.4	79.6	31.2	63.3	62.5	59.1	68.8	36.7	37.5	40.9
Fewer bad debts	21.1	78.9	41.4	76.1	58.0	75.4	58.6	23.9	42.0	24.6
Increase in hours worked	16.3	83.7	40.9	58.9	58.3	63.8	59.1	41.1	41.7	36.2
Less free medical service	22.7	77.3	58.1	79.3	84.8	72.8	41.9	20.7	15.2	27.2
Increase in supplementary services	15.2	84.8	61.3	52.3	41.0	46.9	38.7	47.7	59.0	53.1
Increase in charges per service (all patients)	16.7	83.3	20.5	29.5	15.3	18.8	79.5	70.5	84.8	81.2
Increase in physician's net income	18.4	81.6	45.1	38.1	40.2	62.4	54.9	61.9	59.8	37.6

Strongest agreement is indicated among physicians in Massachusetts and New York.

In New York, for example, about 80 percent of the physicians in Specialty 1 agree, whereas only about one physician in four in Specialty 4 holds this same view. By way of contrast, in New Jersey the situation is reversed; almost 89 percent of the physicians in Specialty 1 disagree that Medicare has resulted in fewer bad debts and essentially all physicians in Specialty 4 agree with the statement. Physicians in the other areas were quite evenly distributed among specialties in their agreement.

In contrast to this general view, 60-70 percent of the physicians in California and Ohio indicate that Medicare has not resulted, in fact, in fewer bad debts. There are no significant differences among specialties in this regard in either area.

Asked whether, in their experience, Medicare has resulted in their providing less free medical service, eligible physicians rather strongly agree. In Massachusetts, for example, almost nine out of ten physicians agree; physicians in New Jersey also strongly agree (99 percent). In Ohio, while in essential agreement with other areas, the physician's agreement is not nearly so strong; between one-half and two-thirds of the physicians agree.

Over three-fourths of the physicians in each area are soundly in disagreement, however, that Medicare has resulted in increase in charges per service among all their patients; the extent of disagreement reflected in the range of our estimates is from 77 percent of the eligible physicians in Massachusetts to about 95 percent in Ohio. All other areas are intermediate to these two areas. There is, furthermore, little variability among specialties in each area in this regard.

It is interesting to note that between 40 and 50 percent of the physicians in all areas except California and Ohio who considered the statement "Medicare has resulted in an increase in physicians' net income" indicated disagreement; in contrast to this essentially even split in response it is estimated that three out of four physicians in California and Ohio disagree (Tables 81 and 83); furthermore, there does not appear to be marked differences among physicians' specialties in any of the six areas in this regard.

It should be noted here that each of these questions is extremely difficult to answer because it is well documented that charges for services and physician's net income have both increased during the period since Medicare was instituted in 1966. To separate out the part of that trend which might be attributable to Medicare is extremely difficult to achieve, if in fact it is possible at all. The validity of answers to these last two questions is, therefore, questionable.

Those physicians in each area who indicated that they did have a net increase in income under Medicare were asked to indicate approximately what percent increase they had experienced. It should be noted that in Table 91 the tabled values for each specialty within each area total to 100 percent. While both the representativeness and validity of the responses to this question can be questioned, it is interesting to observe first of all that of those physicians in each area who agree that they have experienced an increase in income resulting from Medicare, the vast majority indicate that the increase has been equal to or less than 25 percent. In Massachusetts (characterized by a high rate of acceptance of assignment), of those physicians who agree they experienced an increase in income, approximately 40 percent of those in Specialties 1, 2, and 3 agreed; only about six percent of those physicians in Specialty 4 agreed. The response pattern was somewhat different in Ohio which is characterized by a low rate of acceptance of assignment. Those physicians who indicated an increase in income were composed of only about seven percent of the physicians in Specialty 1, roughly 25 percent of those in Specialties 2 and 3, and about 12 percent, or one in eight of those in Specialty 4.

The highest percentages of physicians reporting increased incomes were in New Jersey; 52 percent of those who were in Specialty 3 and 55 percent of those in Specialty 4. In the latter instance, one physician in five who reported an increase in income resulting from Medicare indicated that the increase exceeded 25 percent.

#### M. Suggested Improvements in Medicare Procedures

Throughout the preceding questions some potentially troublesome issues which could conceivably be associated with practicing medicine under Medicare provisions have been raised, and with but a few exceptions the questions have been of closed-end nature. The final question posed

Table 91

## PERCENT OF INCREASED INCOME DUE TO MEDICARE BY SPECIALTY IN EACH AREA

Area	Not Applicable*	Applicable	Specialty 1			Specialty 2			Specialty 3			Specialty 4		
			None	≤ 25	25-50	None	≤ 25	25-50	None	≤ 25	25-50	None	≤ 25	25-50
N. Y.	0.7	99.3	76.0	24.0	-	64.9	25.3	9.8	58.0	42.0	-	63.3	36.7	-
Mass.	9.0	91.0	62.6	37.4	-	59.8	32.7	7.5	58.9	41.1	-	94.2	5.8	-
Calif.	-	100.0	81.6	18.4	-	90.4	9.6	-	65.6	34.4	-	100.0	-	-
N. J.	6.4	93.6	93.8	4.8	1.4	80.0	20.0	-	47.9	52.1	-	44.5	33.7	21.8
Ohio	3.8	96.2	93.2	6.8	-	76.6	23.4	-	73.7	26.3	-	88.3	11.7	-
Fla.	19.2	80.8	74.7	25.3	-	91.4	3.2	5.4	78.7	21.3	-	64.3	23.0	12.7

\* Those who refused to answer or who have not been practicing long enough to judge.

to the physician was a completely open-ended one in which he was asked to make suggestions as to changes in Medicare procedure which might alleviate some of the problems. Collation of the responses produced four rather well-defined areas for improving the present system. They pertain to paperwork, clerical procedures, the system of fee payment, and the fee rating system. The percent of physicians in each area volunteering specific suggestions for changes in Medicare are summarized in Table 92. In this table the entries on the same line as each of the four major headings (Paperwork, Clerical Procedures, etc.) indicate the percent of those physicians who accept assignment at least part of the time who volunteered comment or suggestion. Thus, it is estimated that 13.2 percent of the physicians in New York who accept assignment commented on paperwork; of these physicians, in turn, 63 percent considered the paperwork excessive, about 20 percent suggested the forms be simplified (less detailed) and approximately 18 percent suggested that the procedures be simplified.

Of these four areas for improving the present Medicare system, paperwork and the system of fee payment received the greatest attention from the eligible physician population in each area generally.

Suggestions with regard to the Medicare system of fee payment, on the average, were predominant in all areas ranging from about 29 percent of the physicians in Ohio to over half the eligible physicians in California. The suggestion most frequently made in all areas except Massachusetts was that more realistic allowances should be set under Medicare; allowances which are more sensitive to changing costs and which more realistically take the physicians time into account in delivering services. The relative frequency of this suggestion ranged from two out of five to one out of two of the eligible physicians in each area except Massachusetts. In the latter area (typified by a high rate of acceptance of assignment) one physician in five made this suggestion but, in contrast to the other areas, about half the physicians suggested that fee schedules be set and published as guidelines for physicians' reimbursement. It is notable also that payment of a percent of the physician's full charge and allowing the physician to accept assignment and bill the patient for the remainder of the full charge were not often suggested.

Suggestions regarding paperwork were second in frequency to those concerning fee payment, and it was generally agreed to be excessive.

Table 92

PERCENT OF PHYSICIANS IN EACH AREA MAKING SPECIFIC SUGGESTIONS  
FOR CHANGES IN MEDICARE PROCEDURES

Comment/Suggestion regarding:	N. Y.	Mass.	Calif.	N. J.	Ohio	Fla.
A. PAPERWORK	13.2	38.7	20.7	11.9	48.6	8.0
1. Excessive	63.0	73.6	62.9	87.1	55.3	87.3
2. Simplify forms	19.5	4.7	25.4	12.9	25.5	12.7
3. Reimburse for time spent	-	-	11.7	-	6.0	-
4. Simplify procedure	17.5	21.7	-	-	13.2	-
B. CLERICAL PROCEDURES	20.4	10.1	4.8	2.3	7.8	7.1
1. Do not require patient signature	40.8	30.7	50.2	100.0	36.6	100.0
2. Standardize all insurance forms	59.2	24.7	15.5	-	63.4	-
3. Notify physician when patient has paid	-	44.6	34.3	-	-	-
C. SYSTEM OF FEE PAYMENT	35.2	34.2	55.0	32.2	28.8	45.3
1. Pay full charge	10.7	16.7	6.6	27.4	39.9	23.4
2. Set and publish fee schedule	21.6	49.5	9.1	4.7	9.6	14.0
3. More flexible charge	24.2	9.0	27.4	16.0	7.8	1.8
4. Set more realistic allowances	43.5	24.8	47.6	51.9	43.7	51.0
5. Pay percent of full charge	-	-	9.3	-	-	3.8
6. Allow physician to accept assignment then bill for full charge	-	-	-	-	-	6.0
D. FEE RATING SYSTEM	11.9	17.9	15.6	12.8	4.1	12.3
1. Profile system unfair	-	35.5	4.8	70.4	18.9	21.9
2. Do not require proof of greater cost to get profile raised	28.8	-	-	-	-	-
3. Inconsistent payments for same services	-	64.5	53.0	-	-	-
4. Change in allowable charge without notice	-	-	10.5	10.1	18.9	26.7
5. Profile systems prevent physician from giving free service	31.7	-	31.7	-	29.4	-
6. Fees should be automatically, periodically adjusted	39.5	-	-	19.5	22.8	51.4

Surprisingly most criticism came from physicians in Massachusetts and Ohio (areas representing high and low rates of acceptance of assignment respectively). Physicians in each area suggested that the required form be simplified, particularly with regard to detailed description of services rendered, and physicians in New York, Massachusetts, and Ohio felt that the billing procedure should be simplified.

Clerical procedures, on the other hand, were not often the subject of suggestion. The most prevalent suggestions made were that the patient's signature not be required and that all insurance forms be standardized.

The relative frequency with which physicians who accept assignment made suggestions regarding the fee rating system ranged from a high of about 18 percent in Massachusetts to a low of only four percent in Ohio. In general these physicians felt that the present profile system is unfair principally in that it works to the disadvantage of those with a long fee history as opposed to those physicians with a short or no fee history. Specific suggestions did not follow a consistent pattern among physicians in all areas, but it is notable that about half the eligible physicians in California (characterized by a long history of the relative value system), and almost two-thirds of the physicians in Massachusetts, criticized the inconsistency in payments for the same service both among physicians and over time.



Appendix A

Estimation of Population Estimates from Sample

## Appendix A

### Estimation of Population Estimates from Sample

In the development of this pilot feasibility study, provision was made in the sample design for obtaining population estimates based upon the sample data. Such calculations would be of particular utility based upon a survey selected from a national probability sample in which sample size would be increased.

Since the geographic areas in this pilot study were not selected as a result of a probability sample design, calculations were undertaken separately for each of the six areas. Since the six areas were not selected from a national probability sample, calculations using the data pooled across the six areas cannot be expected to provide estimates of corresponding national values.

Within a specified geographic area, a particular stratum is identified by the subscript  $\ell$ , which can assume values between one and sixteen (four specialties by four groups of years since graduation). Then  $N_\ell$  will denote the number of physicians making up the population of the  $\ell^{\text{th}}$  cell or stratum, and  $n_\ell$  the number of completed interviews. For analysis purposes,  $n_\ell$  includes those physicians not having any Medicare patients, but excludes non-respondents.

Suppose it is required to estimate the total population value of some quantity  $Y$ , such as total Medicare patients, for a specified geographic area. From each interview, the value of the quantity,  $Y_{\ell,i}$ , has been reported by the  $i^{\text{th}}$  physician in the  $\ell^{\text{th}}$  stratum. The values of  $i$  ranges from one through  $n_\ell$ . That is, each physician has reported his number of Medicare patients. The estimated total,  $\hat{Y}$ , of Medicare patients in the area would be computed by

$$\hat{Y} = \sum_{\ell} \frac{N_{\ell}}{n_{\ell}} \sum_{i=1}^{n_{\ell}} Y_{\ell,i}$$

where the internal summation sign signifies summation over all the interviews in the  $\ell^{\text{th}}$  cell, and the external summation is over all the strata in the region.

If the total is required for physicians in a particular specialty for all times since graduation, only those values of  $\ell$  which identify the selected stratum are included in the latter summation.

If a total is required for a particular subset of physicians, perhaps the total Medicare patients of physicians who reported difficulty in collecting the \$50 deductible under Medicare, then it would be necessary to select these physicians. This would most easily be done by defining another response value, denoted by  $I$ , which would have the value, 1, when the physician reported difficulty and zero otherwise. The restricted estimate of the total becomes

$$\hat{Y}_{res} = \sum_l \frac{N_l}{n_l} \sum_{i=1}^{n_l} I Y_{l,i}$$

As can be noted from the form of the estimate, all non-respondents for whatever reason, including physicians refusing to cooperate, those recently having moved from the area, and so on, are credited with the average response of those physicians from whom information was received. This procedure is satisfactory for a pilot study, but the estimates would be biased in the direction determined by the failure of non-responding physicians to be "like" those providing information. While the procedure may be satisfactory for some classes of non-respondents, it obviously is not for all classes, such as non-response due to the recent death by the physician. In a national survey different analysis procedures, to at least partially account for non-response bias, would be desirable.

Associated with each estimated total would be an estimate of the variance of the total. Using the notation already defined, the variance estimate would be given by:

$$\text{Var}^{\wedge}[Y] = \sum_l \frac{N_l (N_l - n_l)}{n_l} \sum_{i=1}^{n_l} \frac{(Y_{l,i} - \bar{Y}_l)^2}{(n_l - 1)}$$

where  $\bar{Y}_l$  is the average response of physicians in the  $l^{\text{th}}$  stratum.

Ratios, or percentages, are similarly estimated except that the numerators and denominators are estimated separately. As an example, the estimated proportion of Medicare patients to total patients involves estimating the total number of Medicare patients, estimating the total number of all patients, then dividing the former by the latter.

Variance estimates associated with the estimated ratios involve the ratio itself, and are only approximate. The degree of approximation is usually satisfactory for most purposes. The particular form of the variance estimate of ratios available from this report involves the

calculation of a new response variable  $Z_{\ell,i}$ , defined by:

$$Z_{\ell,i} = y_{\ell,i} - \hat{R} X_{\ell,i}$$

where  $\hat{R}$  is the estimated ratio,  $y_{\ell,i}$  the numerator response of the  $i^{\text{th}}$  doctor in the  $\ell^{\text{th}}$  stratum, and  $X_{\ell,i}$  his denominator response. The variance estimate is then computed as outlined for totals, replacing the Y-values in that formulation with Z-values, except that the value obtained is divided by the square of the total denominator.

Appendix B

Physicians Mailout Packet

RESEARCH TRIANGLE INSTITUTE

POST OFFICE BOX 12194

RESEARCH TRIANGLE PARK, NORTH CAROLINA 27709



We are writing to request your cooperation in a research project that we are conducting for the Health Benefits Advisory Council (HIBAC). You have been selected through a probability sample of physicians to represent your profession in this important project. You are one of over 400 physicians selected to participate in this project across the United States.

The Health Insurance Benefits Advisory Council was established under the Health Insurance for the Aged Act of 1965 (P. L. 89-97). Under contract to HIBAC, Research Triangle Institute is undertaking a survey of practicing physicians to obtain accurate and valid information on how Medicare provisions actually affect acceptance of assignment and billing arrangements. Based upon your experiences and those of your colleagues, a better understanding can be obtained of day-to-day operating procedures encountered under Medicare: Part B.

Our Field Supervisor will telephone you early in February to arrange a mutually convenient time for a personal interview. Included in this mailout are AMA's letter endorsing this important research project, a memorandum to physicians which explains the study in more detail, and a list of the current members on the HIBAC council.

We look forward to talking with you.

Sincerely,

Jay T. Wakeley  
Director, Center for  
Health Studies

JTW:se

B-2

## MEMORANDUM TO SELECTED PHYSICIANS

The Health Insurance Benefits Advisory Council (HIBAC) was established under section 1867 of the Social Security Act of 1965 which established health insurance programs providing insurance protection for the aged (Medicare). The council is comprised of nineteen outstanding leaders in the delivery of health and medical services. Included are practicing physicians, representatives of insurance companies, state health officials, administrators of hospitals and clinics, and university educators (see attached list of HIBAC members). Dr. Charles L. Schultze, Ph.D., a Senior Fellow of the Brookings Institution located in Washington, D. C. is the present chairman of the council. HIBAC is responsible for seeing that a study of the methods of reimbursement for physician's services under Medicare provisions is conducted. The results of this study are to be reported to Congress together with a presentation of alternatives or modifications to the present methods of reimbursement.

In support of the HIBAC study, the Research Triangle Institute (RTI) is under contract to conduct a survey of over 400 practicing physicians across the country. You have been selected through a probability sample of physicians to represent your profession. Our Field Supervisor responsible for coordinating the data collection procedures in your area will telephone you early in February to arrange a mutually convenient time for a personal interview with you. The Field Supervisor will be in your area for a two-week period to complete the required interviews. We will attempt to schedule your interview appointment at a time most suitable for you in view of your busy schedule. This is the first attempt to go directly to the practicing physician for his viewpoint on these issues. We hope that you will take this opportunity to make your views known.

Participating physicians will be assured of complete anonymity. This study has the endorsement of the American Medical Association (see enclosed letter of endorsement). We look forward to meeting with you.

HEALTH INSURANCE BENEFITS ADVISORY COUNCIL

<u>Name/Address</u>	<u>Position/Organization</u>
Carl E. Anderson, M.D. (Santa Rosa, California)	Clinical Professor of Orthopedic Surgery at the University of California Medical School and member of the staff of the Santa Rosa Memorial Hospital
Mrs. Melnea A. Cass (Roxbury, Massachusetts)	Chairman, Massachusetts Advisory Committee for Elderly Affairs; former president of the Boston branch of the NAACP; former member of the Board of Overseers of Public Welfare for Boston; and former member of the Advisory Committee of the Consumers Council of Massachusetts
G. Robert Cotton, Ph.D. (Grass Lake, Michigan)	President and Chief Administrative Officer of the Cedar Knoll Rest Home, Inc.
James R. Cowan, M.D. (Trenton, New Jersey)	Commissioner of Health of the State of New Jersey
Leonard W. Cronkhite, Jr., M.D. (Boston, Massachusetts)	General Director of the Children's Hospital and Medical Center, and Lecturer in Preventive Medicine at the Harvard University Medical School
Nelson H. Cruikshank (Washington, D.C.)	President, National Council, of Senior Citizens, Inc.; Former Director, Department of Social Security, AFL-CIO
J. Rodney Feild, M.D. (Memphis, Tennessee)	Private practice of neurosurgery, and Assistant Professor of Anatomy at the University of Tennessee
Very Reverend Monsignor James H. Fitzpatrick (Albany, New York)	Executive Assistant for Government Relations for the Hospital Association of New York State
Oscar E. Gutierrez, D.O. (San Antonio, Texas)	Director of the Davila Medical Center
Mrs. Laura Larson, R.N. (Boise, Idaho)	Coordinator of Nursing and Allied Health in the Mountain States Regional Medical Program of the Western Interstate Commission on Higher Education

Edwin H. May, Jr.  
(Hartford, Connecticut)

President of the insurance firm of May,  
Potter, Murphy, and Carter, Inc., and  
U.S. Representative in the 85th Congress  
(1957-1958)

William S. McNary  
(Detroit, Michigan)

Retired President, Michigan Blue Cross

Sherwin L. Memel, J.D.  
(Los Angeles, California)

Attorney at Law; Consultant in Health  
Law and Economics

Stanley A. Miller  
(Harrisburg, Pennsylvania)

President and Treasurer of Miller's  
Auto Supplies, Inc. and the Stanley  
Distributing Co., and Vice-President  
and Board Member of the Penn American  
Corporation and the Quaker State Life  
Insurance Co.

Jay S. Reibel, M.D.  
(New York, New York)

Resident in Psychiatry, Mt. Sinai  
Hospital

Ernest W. Saward, M.D.  
(Rochester, New York)

Associate Dean of the University of  
Rochester School of Medicine and  
Dentistry and former President of the  
Group Health Association of America

Mrs. Anne R. Somers  
(Princeton, New Jersey)

Associate Professor, Department of  
Community Medicine, College of Medicine  
and Dentistry of New Jersey, Rutgers  
University, and Research Associate,  
Industrial Relations Section, Princeton  
University

J. Minott Stickney, M.D.  
(Rochester, Minnesota)

Professor of Clinical Medicine at the  
Mayo Graduate School of Medicine,  
University of Minnesota; Program  
Coordinator of the Regional Medical  
Programs for the Northlands Region

Harlan Thomas, M.D.  
(Tulsa, Oklahoma)

General practice of medicine

The terms of the following members expired during the study:

Margaret B. Dolan (Mrs.)  
(Chapel Hill, North Carolina)

Professor and Head, Department of Public  
Health Nursing, University of North  
Carolina School of Public Health

Merrill O. Hines, M.D.  
(New Orleans, Louisiana)

Medical Director and Chairman of the  
Board of Management, Ochsner Clinic;  
Professor of Clinical Surgery, Tulane  
Medical School

Charles L. Schultze, Ph.D.  
(Washington, D.C.)

Professor of Economics, University of  
Maryland  
Senior Fellow, Brookings Institution

Herman M. Somers, Ph.D.  
(Princeton, New Jersey)

Professor of Politics and Public  
Affairs, Princeton University;  
Consultant and author in the field of  
health services



# AMERICAN MEDICAL ASSOCIATION

535 NORTH DEARBORN STREET • CHICAGO, ILLINOIS 60610 • PHONE (312) 527-1500 • TWX 910-221-0300

ERNEST B. HOWARD, M.D.  
Executive Vice President

January 26, 1972

Dear Doctor Anderson:

The Health Insurance Benefits Advisory Council (HIBAC) constituted under the Health Insurance for the Aged Act of 1965 (Medicare) is conducting a study of methods of reimbursement of physicians' services under Medicare.

In conjunction with this study, the Research Triangle Institute, a not-for-profit contract research organization, is conducting a sample survey of practicing physicians for the purpose of determining (1) what features physicians consider in deciding whether to accept assignment, (2) the extent to which they have adopted special billing arrangements to cope with the deductibles and coinsurance features of reimbursement and (3) the need for these billing practices.

This sample survey is the first of its kind to go directly to the practicing physician, through personal interview, for information on these specific issues.

Your cooperation will assure greater accuracy and validity of the needed information and analysis to follow. All information on individuals is, of course, confidential.

I urge you to cooperate with this important study.

Sincerely,

A handwritten signature in cursive script, reading "Ernest B. Howard".

Ernest B. Howard, M.D.



Appendix D

SUPPLEMENTARY STATEMENT  
BY  
BERT SEIDMAN



by

Bert Seidman

on the

Report of the Health Insurance Benefits Advisory Committee

on the

Study of Methods of Reimbursement for

Physicians' Services Under Medicare

(I am authorized to state that Nelson H. Cruikshank is in agreement with this statement. Mr. Cruikshank was a member of both the Council during most of the period when the report was in preparation and of the ad hoc committee which developed the report.)

I have signed this report because it directs the attention of the Congress and the general public to one of the major defects -- perhaps the major defect -- in Medicare -- the fact that despite the benefits they receive under the program, beneficiaries must still pay out of pocket nearly 75 percent of the cost of physician services. Part of this is accounted for by required premium payments, deductibles and coinsurance which I firmly believe should be eliminated. This could be done by acceptance of the recommendation of the Advisory Council on Social Security that Part A (hospitalization) and Part B (physicians' services) be integrated into a single program financed one-third out of general revenue. But excessive out-of-pocket payments are in part due to the method of reimbursement of physicians.

I, therefore, welcome the Council's recommendation for experimentation with respect to all three of the areas indicated in Congress' charge to the Council: methods of physician reimbursement, assignments, and the share of total

physician costs which the beneficiary must assume. However, I am very doubtful that the limited experimentation the Council has suggested will mitigate in any significant way the very heavy burden of expenses the beneficiaries now bear in out-of-pocket payments for physicians' services.

Experience under Medicare has demonstrated time and again that proposals for limited experimentation of the kind suggested by the Council are completely ineffectual. Unless there is strong incentive for them to do so, providers simply do not participate in such experiments. On the insistence of providers, reimbursement methods were included in the legislation which have resulted in out-of-line physician fees and excessive beneficiary payments.

The physicians are perfectly satisfied with these reimbursement methods. The beneficiaries are not. The beneficiaries have no way of getting their physicians to participate in the suggested experiments. But the Council's recommendations would do nothing to encourage any appreciable number of physicians to participate in the experiments.

What is urgently needed is a much more aggressive approach to what the Council has acknowledged is a very serious problem. Instead of limited experimentation almost certainly doomed to failure what is needed to deal effectively with the problems the Council has highlighted is aggressive system-wide development of a fee schedule program with strong incentives for voluntary participation of physicians.

I am not now recommending mandatory fee schedules because unless or until such fee schedules apply to non-Medicare physician services there is a possibility that physicians might regard Medicare beneficiaries as second-class citizens and that their access to needed care might be limited. If,

however, the experience with mandatory PSRO applied only to Medicare and Medicaid should demonstrate that these programs and their beneficiaries do not suffer, consideration might be given to the establishment of mandatory fee schedules.

Fixed fee schedules as a dominant method of reimbursement for voluntarily participating physicians would have the advantage of greater cost control than the present reimbursement method. As the report of Robert R. Nathan Associates prepared for the Council states: "The statutory criteria of 'customary,' 'prevailing,' and 'reasonable' charges, even if rigorously applied by Medicare carriers, have the effect of providing physicians with both an incentive to 'manage' fees and a means of validating them. . . . Adoption of fee schedules could have (a) . . . dampening effect." In addition, fixed fee schedules would have the advantage of giving advance knowledge of what a fee would be.

There is no reason why there should not now be established as widely as possible fee schedules under which physicians would participate on a voluntary basis. This voluntary fee schedule program might include the following elements:

1. The reimbursement to physicians should be adequate and even generous considering the value of the services performed and the investment in education that physicians have made. But they should not be exorbitant or unreasonable.
2. The fee schedules should be negotiated by region or service area (perhaps using the PSRO service areas). The discussions in which the fee schedules are negotiated should be tripartite in character including duly designated representatives

of the medical profession, the beneficiaries and the government agency. Lists of participating physicians should be made public and doctors should be required to inform patients eligible for services under Medicare as to whether or not they are participating.

3. To be eligible for participating each physician would be required to agree to accept the scheduled fee as full payment for a covered service.
4. Procedures for reimbursement for physicians rendered under prepayment group practice organizations and other health maintenance organizations would be developed taking into account the fee schedules established by negotiation as a controlling factor in determining payments to their participating physicians by whatever method.
5. Provision should be established for appeals from decisions respecting the application of the fee schedules by either participating physicians or beneficiaries.

The above proposal is consistent with but obviously much more extensive than the Council's recommendations. It is far more appropriate to the seriousness of the problem than the very limited approach the Council has suggested which, as I have stated, would be likely to have minimal if any effect. The prospect of continued excessive Medicare costs beneficiaries must bear and uncontrollable costs the Congress must finance cannot leave either the beneficiaries or the general public sanguine about the future of the program. I have suggested in skeleton form the outlines of a program which I would recommend to the Secretary and the Congress for immediate consideration and

study for implementation, perhaps in modified form, at the earliest possible date.





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